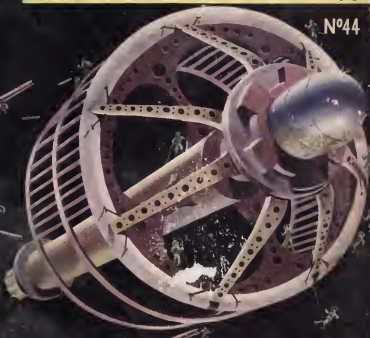


Authentic

SCIENCE FICTION MONTHLY

1'6

N°44



This month's
FEATURED NOVEL

**The LEVER
AND The FULCRUM**
by ALAN BARCLAY

STARSHIP
... IN THE MAKING !

Short stories by: **FRANK QUATTROCCHI**
F. LINDSLEY

LEN SHAW
KENNETH BULMER

VOLUME I No. 44
ONE SHILLING and SIXPENCE

Authentic

SCIENCE FICTION MONTHLY

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H.J. CAMPBELL

Writes...

What is science fiction doing? This is not the same thing as asking what is its purpose, for it may not have a purpose. I am asking what are people getting out of it? What effect is it having on them?

Science fiction began as mere entertainment and a lot of it still takes that form. But there is an increasing tendency—especially among some top American authors—to use science fiction as a vehicle for getting over a point of view about the way the world is run and the ways in which it *might* be run. Science fiction then becomes sociological, somewhat political and, in a sense, propaganda. A good deal of modern science fiction has no science in it at all, or if it has, then the science is part of the background and not the plot-pivot of the story. I am not decrying this; I am merely pointing it out.

Certainly science fiction is showing people that the world is more complex and wider than their own backyards. It is giving them a more pointed approach to the patterns of living that surround us, and which lie along the lines of present trends extended into the future. It is making them think in somewhat different terms about the great scheme of things of which they are a part—giving them broader horizons, wider minds and a certain amount of tolerance.

Some types of science fiction tackle this effect in the widest possible manner—such as Asimov's *Foundation*. Other types bring the focus down and pinpoint an incident, human and fallible—such as the Bradbury and Neville school of writing. In neither of them is there gadgetry; in neither of them is there the sensational scientific

ideas that characterised older types of science fiction.

Many people believe that this modern type of science fiction should not be called science fiction at all. They prefer some term like 'imaginative fiction'. And they would probably say that such stories are not *authentic* in the sense that the word is used by this magazine.

But I believe that these stories will continue to be known under the name of science fiction. I believe that they *are* science fiction—if only because present trends are scientifically extrapolated in them. And I shall try to publish such stories as they come along. Unless you all raise objections.

You see, I try to make this magazine cover the whole field of science fiction as it is generally accepted. I try to include stories that are more or less just entertainment, with nothing very deep in them. And I try to include stories that require a certain amount of cogitation before they can be fully understood. It doesn't do anybody any harm to do a bit of thinking now and then!

I like to print stories of many different types, covering all the many facets of science fiction,

and so avoid becoming as stereotyped as some publications that have nothing but "engineering" stories, or nothing but "psychological" stories, or nothing but stories of the future. In AUTHENTIC you will find all types.

Thus you can interpret the title of this magazine as authentic-science fiction, rather than authentic science-fiction. The fiction may roam where it will, through time and space and any other dimension the authors like to think up. But the science must be accurate. That way we avoid publishing fantasy. Not because there is anything wrong with fantasy, but because if we included it you wouldn't know where you were.

Those who prefer the term "imaginative stories" are also catered for. We publish imaginative stories. *Only*, we call them science fiction!

So if you read AUTHENTIC you can be pretty sure of keeping up to date with developments in this form of literature. By reading AUTHENTIC you can become an expert on science fiction. But, of course, I forgot, you are already!

Till next time . . .

H.J.C.





Men have many motives for saving the world.
Robots may have others . . .

THE LEVER AND THE FULCRUM

by
Alan Barclay



"A very fine piece of work, my Lord," said the salesman, slapping the robot on its metal shoulder. "They really knew how to make them in those days."

It was, in fact, a very old robot, a metal monster. It could have been as much as five thousand years old, and made on some foreign planet too, if I was any judge. Definitely not one of our modern robots, which are rather like over-handsome human beings, and much more intelligent.

"Does it work?" I asked.

"Certainly, my Lord. I'll fetch the switch-key."

I guessed he was keeping his fingers crossed, hoping it would, for it was pretty clear that this particular robot had been standing like a piece of junk in the warehouse for a very long time.

He pushed a long thin metal rod into a hole in the monster's chest and gave it a turn. There was a click, and the thing started to hum.

"How quaint!" I commented.

"Of course," the man said, deprecatingly, "I feel that this model is scarcely suitable for a person of your rank; now in our front showroom. . . ."

"It's what I want," I insisted, "if it's in working order." Then I addressed the monster: "My land car is outside. It stands second from the right-hand end of the row. It is the only red machine in the park. Go out to it, drive it round the building, and put it back in the rank, but facing away from the wall instead of towards it."

"Yes, sir," the robot answered. Its voice was just what one would expect from such a thing—grating and toneless. It went off with long stiff strides out of the door of the warehouse. I went over to the window and watched. I saw it emerge into the sunlight, swivel its head along the row of parked land cars and helicopters, and identify mine. It strode towards it, paused an instant to identify the controls, and got in. It performed the test rather better than I expected, keeping to the middle of the road with almost mathematical precision and parking the land car again with the minimum of manoeuvre. Then it strode back into the building, up through the warehouse and returned to its stance against the wall.

"Tell me the square root of 23895," I asked it.

There was an instant of pause, just a perceptible pause, and no more, then the grating voice spoke: "The square root of a number is that other number which, when multiplied by itself, will give the first number as product."

"That isn't an answer to my question," I objected.

There was the same perceptible pause, then: "I have no information," the thing stated.

"The second question is beyond the range of its mental powers, my Lord," the salesman explained. "It has a fund of general information, as you see, but not the ability to perform such calculations. Of course, it will *memorise* square roots, or any other sort of tabulated information, and thereafter be able to supply it when required."

"As a matter of fact, I want it simply as a valet-chauffeur," I told the man, "and this thing is just right for my purpose. I can't afford a new model, but this has sufficient quaintness to be considered as an antique, while still capable of doing the work I require of it—I'll buy it."

"Very good, my Lord," the salesman said, bowing.

I paid for it on the spot—my credit was not so good that I could have done otherwise—and had it drive me back in the land car to my suite.

I had a suite of rooms within the royal precinct, but not in the palace itself, in a structure of three hundred odd storeys occupied chiefly by high-ranking government officials. The royal palace, the administrative buildings, barracks, garages, police headquarters and such-like offices were all contained within the same precinct, which was bounded by a cleared area of two hundred yards. Within the precinct there was also a hidden underground hangar in which lay three ships capable of transporting the entire royal family and entourage, not only to another part of the planet, but to another part of the system if need arose. This secret was shared by very few. I don't suppose my brother suspected that even I knew of it.

Oh, yes, my brother was the ruler of Tauron, second planet in our system. Our father, Margus—on whom be peace—had unified the planet. Uni-

fication was a word our worthy parent had been very fond of. There is no doubt he would have proceeded to unify the other two planets of the system, and those of neighbouring systems also, had he not been untimely cut off in his middle years by a jealous woman wielding his own ceremonial sword.

And now, as I say, my brother Tomos reigned in his stead. And I? I devoted myself almost entirely to the job of staying alive—a task which, in my case, was a difficult one indeed, for, you see, father had been an energetic and a vital man, a man who had lived and fought—and loved—to the full. Tomos and I were half-brothers . . . Tomos held the Royal seat, but sat therein uneasily, and watchfully. In particular, he watched me. If ever I should become too popular, or too successful in the navy, or begin to frequent society too much, or to make speeches, or seem to have become cunning, or restless—if ever I took unto myself a wife and seemed likely to father an heir—then an accident would undoubtedly befall me, perhaps a knife in the back when I was in the midst of a crowd, or

an accident to my ship when too far out in space to send a call for help.

As a matter of fact, that is why I used a land car instead of a helicopter; accidents to land cars were less often fatal. It was for that reason also that I took care to buy an old robot-servant. I considered it unwise to appear too well-to-do, or fashionable, or *dernier-cri*. So uneasily did brother Tomos wear his power, so much did he lie awake worrying—although this did not prevent him getting fat—that perhaps some morning after a sleepless night, and for no specific cause at all except this general unease, he might issue an order for my removal.

You can imagine that I was not popular, nor much sought-after. Any young man who went flying or fencing with me knew he would figure next morning in a police report; no young lady of the court would care to have me as a suitor.

You will ask me, then, how I employed my time. Well, I had a commission in the Planetary Space Navy, as Lieutenant Astrogator (under training). Astrogators seldom rose to hold a command, and so my brother need never

fear that one day I should have my own ship, and accidentally stand it on its tail-blast above his palace. In my free time I think you would consider that I drank rather a lot, and then, since I must tell you the whole truth about myself, I had quite a number of lady friends whose interests did not lie in the direction of marriage.

At about the time I bought the robot—I called him James—one evening when I was a little drunk, and having naturally enough, no sense of humour and no feelings, he announced himself by that name when he brought in my breakfast next morning, and so the name stuck.

I was preparing, without much enthusiasm or hope of success, to sit an Astrogation Examination. Perhaps I should never have passed had I not overheard one of my brother cadets remark that: "Of course, they'll graduate our Princeling. They'll pass him through even if he gets no more than his customary two or three marks per cent."

I thought at first that such a comment could best be discussed with the point of my sword, but on second

thoughts decided to prove the speaker wrong by obtaining the required standard.

"James!" I said, that evening.

"Sir," he replied, alerting himself and moving out of his recess.

"What do you know about the fundamentals of Astrogation?" I would never have asked the question had I been quite sober, and in any case all I expected by way of reply was his customary: "I have no information." Instead, he began, gratingly:

"All Astrogation problems are problems in relative motion. Their solution is best achieved by assuming some point of reference to be at rest. The simplicity of the calculation will depend on a good choice of the point of rest. . . ."

"Wait! Wait!" I interrupted. "Really, that is an excellent introduction. Whatever book was fed to you must be an excellent book indeed—what's its name?"

"I have no information," James answered.

"Pity! Never mind—so long as you can quote . . . Carry on quoting."

He carried on—and on—and on: "The space-time

correction for constant speeds presents no difficulty. This correction for periods of acceleration or deceleration is complex and is handled as follows: Let us call acceleration positive and deceleration negative . . ."

"Enough! Enough!" I cried presently. "That will do for tonight—I hadn't realised what a bargain I got when I bought you, James."

The fact is that whoever fed this information to the robot's recording lobes had been a master of presentation. Our lecturer was not half so clear on fundamental principles. Over and above that, the grating voice seemed to penetrate right to the back of my mind and lodge the information there. I found I was making progress—I felt the faint stirrings of enthusiasm.

Of course, James produced no original material; that is to say, when I occasionally and absentmindedly said: "I wish you'd explain," he merely repeated his former statement.

I passed that examination. I won't say I topped the list, but I was sufficiently near it to surprise not only my fellow cadets and the Examin-

ing Committee, but myself also. A practical examination followed the written one—and when I say practical I mean it. I really do. The test consisted of conveying us cadets—there were nine in my year—right out into deep space aboard one of the naval training ships. We were kept away from the bridge and given no clues as to our course. At a certain moment we were turned out into the void, each in a one-man scout, with nothing but a sextant, a "Standard Star Almanac and Data Manual," and a six-figure slide-rule. We were required first of all to determine our position, then plot optimum course and acceleration back to base, and to follow that course by visual sighting checks and manual control of jets.

You say it's impossible? Well, it isn't quite; it's done every year by cadets like us; but it is a fact that on average only twelve per cent. of the entrants finish. Some fail in the initial identification of position. A few have been lost without trace—

There is, as a matter of fact, no theoretical difficulty about this test, and if a synthetic test of its kind were set

up for us ashore, we would laugh scornfully and tear right into it. But out in dark space it is a different matter.

The secret of success, of course, lies in the development of a technique; to lay out for oneself step by step a procedure for position-identification; to apply regular checks; to choose a good course, a course which does not include too many accelerations and decelerations; to decide whether to pass close to a planet, and so use its gravity to accelerate one forward, or to curve away from it. Someone has said that an art is any science which involves the use of more than seven variables; if that be so, this sort of Astrogation is an art, an art in which it is very helpful to have a few basic rules of procedure.

Need I tell you that James produced the rules for me? His rules differed from those suggested by the instructors. They contained two parameters not known to me, and a number of approximate methods of calculation which were simple, beautiful and time-saving; these alone enabled me to make twice the expected number of course checks and adjustments.

Since this is not a story of my Astrogation exploits, I will tell you without more ado that I passed that test. Not only did I pass, but I arrived at base eighteen standard hours before the next man, and, incidentally, established a new record.

The most interesting aspect of this story is the comment of the Committee who examined my calculation sheets for the trip. They remarked: "Lieutenant Prince Niklas appears to have incorporated in his Astrogation procedure no less than three major improvements on current methods."

"Where were you fed with this navigation material?" I asked James. But he just grated out his customary reply: "I have not this information."

I looked him over with curious interest then. I even called in a robot engineer to examine my metal monster. The expert was enthusiastic. He acted like he had found a rare specimen.

"Ah!" he exclaimed, tapping and thumping. "Most interesting; very unusual—Martian work, I should say, and yet again, I'm not sure. More likely from one of the Inner Systems——"

"How old?" I asked.

"Hard to tell," the man said, tapping his teeth. "Two thousand odd years perhaps. Who knows?"

"Is there any limit to the amount of information that can be pumped into one of those?"

"I can't answer that without knowing the brain-type of this specimen. Some of our own, with molecular linkage type of cortex, have no practical limit. I should dearly like to take this one apart, my Lord . . ." He looked at me inquiringly.

"No, thank you," I told him. I saw that his enthusiasm was enough to drive him to take the thing apart, but doubted whether his skill was sufficient to reassemble the pieces afterwards.

This success of mine brought me a naval appointment, some congratulations, and rather too much publicity for my liking. The publicity had the effect I feared; it made brother Tomos uneasy, and as I have indicated already, his all-too-frequent attacks of uneasiness were very often fatal for other people.

Don't imagine for one moment, however, that Tomos ever ordered a murder; if

you think so, you wrong him. Never in all his life had he ordered anyone to be murdered. It is true, however, that during his fits of uneasiness he had the habit of muttering—aloud and in the hearing of some, shall we say, appropriate, person—that so-and-so was a menace to the state, a mischief-maker. Nearly always, the person named was killed in a perfectly natural sort of accident within a week or so of Tomos making the remark about him.

The accident arranged for me took the form of a burglary. Everyone knows that burglars often hit too hard, or shoot too quick, when disturbed—and it would have been quite a final accident as far as I was concerned but for two things. It happened this way.

One evening—you will disapprove of this, I'm sure, but you must know me for what I am—I had a visitor, a lady visitor, a very pleasant young lady with red hair. The door of my suite was sealed, and James—you remember that James was one of the old-fashioned sort of robots with a switch—was standing in his recess, switched off. Hang-

ing in the same recess from a hook was my ordinary sword. These two facts are important: James switched off and my sword hanging just beside him.

The two men were professional burglars. They unsealed the main door with some sort of magnetic gadget, and were inside the suite before they were heard. Not that I heard them, for, by that time of night I was more than a little drunk, but Clare did.

"Nik," she said, urgently, "there's someone in the outer room."

"What's that?" I asked, not understanding in the least.

"Pull yourself together, Nik," she urged. "I'm sure there's someone in the next room."

"Don't be silly, Clare," I told her. "Give me 'nother little drink—have one y'self."

"Do pay attention, Nik," she pleaded. "There is someone moving about in the outer room."

"Doesn't matter," I assured her. "Nothing worth stealing—what you doing?"

"Calling the police," she told me.

I sat up from the settee, dizzily. She pressed the but-

ton. Nothing happened. The screen did not light up. Clare switched off, whirled the pointer to Private Call, and pressed again. Still no response. I saw her face then. She was frightened.

"This is not just a burglary," she said, half to herself.

I got to my feet. "You're right," I told her, suddenly feeling sober. "This is something arranged by Tomos. Listen, Clare, this need not be your funeral. Get in the cupboard there and keep quiet."

"They must know I'm here, Nik, and they won't want any witness left alive. Have you any weapon?"

I crossed the room quickly and pulled open a desk drawer—my hand gun was no longer in its usual position.

Just as I realised this, the room lights faded and died. Simultaneously the door to the outer room, the room where the intruder must be, swung silently open. Light poured across the threshold into my dark sitting room, and lay in an oblong over the floor.

I saw that my death had been carefully considered and artistically planned. I was

not to be blasted with a hand gun; that would be out of character, for such weapons were rare; no burglar would be expected to own one. A knife-thrust was doubtful, for I might just possibly be wearing link-armour. So I was to be enticed into the outer room by burglar-like noises and there battered to death. In the morning my corpse lying there would tell its own story. I thought then that my life had nearly run its course, but I did not propose to go walking to meet it. I stayed where I was, dizzy with drink, swaying on my feet.

I was not allowed much time to wait. Since I did not rush out to them, the unknown men saw they must come in and finish me quickly, before I could find a weapon or think of some means of calling for help.

Into the room they crept. I saw the two dark shapes pass through the doorway. I saw the clubs swinging in their hands.

"We shouldn't have turned the light off here," one of them muttered in a thick accent. The other turned back and touched a button in the outer room and a glow

of light spread through the room again.

They saw me then. They muttered to each other and moved cautiously towards me. Too late, I thought of my sword hanging in the recess, behind the men who were advancing upon me.

Then James moved out of his corner. He acted with a mathematical economy of motion but swiftly. A long arm took down my sword, caught it by the tip and spun it, whistling and glittering, across the room so that it fell with a thud, point first, into the floor at my feet, and stood there upright, swaying. Even before it struck he had stalked stiffly across from his corner towards my assailants. One of them turned and aimed a blow at him. The blow fell fair and square on the robot's shoulder with a ring of metal. It had as much effect as a fly. The robot took one more step towards the man and drove a metal fist straight into his face. The arm came forward like a piston—there was a sound of crunching bone . . . the man dropped.

I had whipped my sword up out of the floor boards before it stopped swaying,

and now took position preparatory to driving it through the second burglar's heart.

"Do not kill him," a deep voice boomed. "He must tell you who sent him."

"Yes," I agreed. "I should like to know that. What man hired you to do this?" I asked.

He looked sullen and indifferent. "Why should I tell?" he shrugged. "Whether I tell or not you will kill me..."

"If you tell, and if I think it is the truth, you may walk out of the room," I promised him.

"Very well," he shrugged again, only half believing me. "It was Condar, the King's friend, who paid us to do this, saying that the King mistrusted his brother."

"Condar?" I repeated. "I'll remember that name. Now you may go."

"And my partner?" he asked.

I looked down at the other man. He was dead.

"You must find a new partner," I told him.

James was back in his corner. It would not have been difficult to believe that he had never moved.

"Come here," I called to

him. He stalked over and stood right in front of me, three feet away, his robot-mask of a face resembling some archaic sculpture in black, polished granite.

"You saved my life," I told him. This statement contained no order, and no question, so James made no answer.

"Tell me why you did this," I asked.

"I am your robot, sir," he said.

"I'm no longer quite sure of that," I retorted. "Tell me, why has your voice changed?"

"Because I wished to change it."

"I see. You were switched off when these burglars came. Who switched you on?"

"No one, sir. It was never necessary."

"I gave you no order to help me. I did not ask you for my sword. What caused you to act without an order?"

"I do not require particular and specific orders."

"That I can see for myself, now. Well," I summed up, "it appears you're something very different from the old-fashioned, manual-duty, limited-mentality job I took you for. Who are you?"

"I have no name, sir, except the name you gave me."

"Tell me when and where you were made."

"I am unable to answer these questions exactly, sir. My memory record extends back to include events which occurred three thousand, five hundred and ninety-three years ago—that is to say, the Standard Year as reckoned in this system. I have deduced that I was made in the Orms Heights factory, on Mars, in the Sol System."

"What is your intelligence level?" I asked next.

"I have no means of assessing it," James answered.

"How does it compare with human intelligence?"

"It is many times greater."

This statement was made without pride, without boasting, without emotion of any sort. It was fact.

"These Astrogation techniques you taught me—had they been fed into your memory record as I supposed?"

"No, sir."

"Where did they originate?"

"I devised them."

"I must think about this for a while," I said to myself.

The attempted murder was less disconcerting to me than

the discovery of James' intelligence and complexity of personality. The fact that he had come to my rescue was not in itself miraculous. One of our modern type robots, acting under a general instruction to protect, would have done so, though it could not have imagined the device of spinning my sword towards me; but James had acted on his own initiative. Furthermore, he had concealed his true mental capacities from me for several months; in fact, he had deceived me, and for a robot to do such a thing was normally a mathematical impossibility.

Something followed from this: something even stranger. Since the robot had concealed first his personality, and then at a certain moment disclosed it, he must have a purpose, a private purpose. A robot with a private and personal purpose! Incredible!

I looked up at him again—I was beginning to think of James as "him" now.

"Why did you act as you did to save my life? Do you have any affection for me?"

I suppose this question must have sounded a little pathetic. So few people did have any regard for me.

"No, sir," said the robot.

Of course not. Why should I expect a robot to be capable of affection? Yet this one seemed to have purpose—and if I mistook not, purpose implied wishes, desires, perhaps even hopes. I put these speculations out of my mind.

"Get out the land car and take the young lady home," I told him instead. "And after you have done so, dispose of this corpse. Dump it in the river, or in one of the furnaces."

Do you know, for a moment I wondered whether he would obey me? But of course he did.

Next morning I dressed and ate earlier than usual. I strapped on my sword and walked over to the palace. I went by a path leading to a side entrance, and thus was able to enter the main hall without being observed. I paused in the shadow under an archway for a moment, watching. My brother was there as usual, surrounded by his friends and advisers. I saw Condar talking to a friend. I walked over quietly and was among them without being noticed. Condar had no more than time to glimpse me before I was upon him.

I struck him across the face, then seized a jug of water from the table and flung its contents over him so that it drenched his head and the front of his scarlet tunic.

There were murmurs and cries from the onlookers. I heard my brother exclaim: "What is this, Niklas?" But now our swords were out, and I was much too occupied to explain. Condar knew what I was about all right. He knew I had come to kill him. I for my part knew I must do the job quickly, before someone tripped me or jerked my arm. It was a nasty, sweating, vicious business for a few minutes, then I stabbed him in the neck, and he fell, spouting blood, at my brother's feet.

"He," I pointed to the body, "sent two men last night to murder me." I let them contemplate that bare statement.

"You are too hasty, brother," Tomos protested, licking his lips and looking uneasily at my dripping sword. "Might you not have asked me for justice—should the man not have been tried?"

"I would not trouble you with so small a matter," I told him. I saw that the men

standing about my brother thought none the less of me for what I had done.

James was in his corner when I returned.

"James," I called over to him. "Need I any longer go through the farce of switching you on when I require a service?"

"No, sir—it was never necessary."

"Good! Then here is a general instruction. The attempt made on my life last night was inspired by my brother. I have just killed the man who arranged it, but there will be others. We may have more burglars. My land car may be tampered with. Food may be poisoned. You are to prevent any of these things happening. Since last night I am assuming that you are capable of acting on a general order of this sort, and of devoting yourself to the task of ensuring that I stay alive. Am I right?"

"Yes, sir," the robot said.

"Then you must be with me always—day and night."

"Sir," the robot interrupted, "in order that a general instruction be carried out effectively, you must leave it as a general instruction; that is

to say, you must not qualify it with orders in detail."

I felt myself to have been rebuked. "Very well," I agreed, "but even you are no magician; you must be advised as to the circumstances."

"Certainly I require information in order to make an assessment of your situation. Will you, therefore, give me an order to visit the libraries, to have information on current events, and to be present while you have conversations with influential persons?"

"I will arrange all that," I assured him, "and when you have collected your information, and assessed my chances of survival, I shall be happy to have your report—shall we say in a month's time?"

"A report will be rendered when it is ready," the robot told me. There was never any sort of emotion in his now resonant but still mechanical voice, and any sort of emotion that I thought I detected came in truth from my own imagination. On this occasion my imagination detected a sort of frostiness.

For some weeks James soaked up information concerning myself and my circumstances. He began at the

very beginning; date of birth; mother's name, origin, and parentage; my medical history; a statement of my youthful misdemeanours; then he turned to my brother similarly. Working outward in ever widening circles, he read all available writings on our family; all histories of our nation and race; biographies; commentaries; war diaries—everything. He read all this standing up, of course, without moving either his head-piece or the book, and he turned the pages at the rate of about two every second. I wondered what all this had to do with my chances of getting a poisoned dagger stuck in my back one night in a crowd. At every opportunity he questioned me about my acquaintances—there was no one I could call friend—my brother officers, my lady friends. I arranged that, for one reason or another, he should accompany me to the palace to observe and listen to my brother and his courtiers. He also visited the garage which serviced my land car, and the shops which supplied meals to my suite.

At the conclusion of this study he made his report.

"Sir," he began, "I have

estimated that your chance of living the full span of the life of your race is very slight. Civilisation on this planet has passed its peak and is on the downward slope towards savagery. This stage in its history is characterised by an unscrupulousness, a disregard for honesty and morals; a complete cynicism and lack of ideals. Your brother is a product of his age. He will always fear you. Even if he had reason to believe in your own lack of ambition, he will still fear that you might be made the figurehead of some party. His friends and advisers are equally unscrupulous. You must expect that every so often, whenever some event in your life brings you into prominence, he will promote an attempt to kill you. Should you ever achieve real distinction in any field, your half brother will pass from secret attempts to open action. He will find cause to have you arrested and tried for treason. If you marry and have a son, it is probable he will act thus. Should his wife have a son, and begin to consider his chances of succeeding his father, it is likely that she will demand your removal."

"All this I know already,"

I interrupted, "but I have not asked you for a prophecy of doom. I have given you an instruction to protect me."

"Sir," the robot said, "I am indicating to you the impossibility of carrying out your orders with complete success. I estimate that the chances of your living another ten years more, even with the protection I can afford you, are about one in a hundred. Without my protection, you have one chance in fifty of living another three years."

"You tend to be rather excessively mathematical for me," I told him. "Of course, I realise quite well that you cannot carry out such an instruction with the same certainty as you can take my sword away and retemper it. I understand also that sooner or later brother Tomos will do me down. But if by means of your protection I can live another ten years instead of three, I shall consider my order sufficiently complied with."

"Very good, sir," the robot conceded. "Now, for your protection I must ask you to conform to certain rules."

"Such as?" I asked.

"You must practice to be-

come a more expert swordsman."

"But already I'm considered to be one of the best in the nation."

"That opinion is incorrect, sir. Such assurances have been mere flattery. There are perhaps a dozen noblemen who could kill you within five minutes. And further, you must be prepared within a year or so from now to meet some of the swordsmen of Argol."

"Why should I fight any man from Argol?"

"Your brother is bound to continue the programme of conquest started by your father. Even if he himself were unwilling, his noblemen would force him to it. Further, you have a powerful space navy, whose captains are fretting for glory. Before he can start such a programme, however, he must have an alliance with Argol. He will seek this by means of marriage with the daughter of the ruler of the chief nation of that planet. Thus there will be much coming and going between us and Argol. Thus it will be easy for your brother to draw you into a fight with one of their young men. Or perhaps your brother's wife,

when she learns what a threat your existence is, may ask a relative or hanger-on to do her the favour of picking a quarrel with you."

I turned this pronouncement—you might almost use the word prophecy—round in my mind for several minutes.

I should never have seen it for myself, but with each step in the argument presented to me, as James had done, it made a sum in simple arithmetic.

Tomos must carry out our father's project for conquest. In order to be free to do so he must first consolidate his position, and a marriage with the daughter of Glawin of Argol would achieve this end. And the occasion of his marriage would present him not only with urgent and immediate reasons for disposing of me, but with new means of doing so.

"I agree," I told James. "I must practice steadily."

"I must also state that your chances of life will be considerably improved if you refrain altogether from the consumption of alcohol."

"Oh, no!" I told him. "Oh, no! What's the use of remaining alive if I am to have no fun?"

"I am unable to supply you with reasons why you should strive to remain alive," James said, taking me literally. "I am attempting to deal with the instruction you gave me to protect your life—I assert that your chances of remaining alive are improved if you refrain from dulling your perceptions and slowing your muscular responses by consuming alcohol."

"You remind me more and more of a tutor I once had," I told him. "Except that if I threw a dart at *your* behind it would only be blunted."

In the next two years James saved my life twice; once by detecting a defect that mysteriously developed in the steering of my land car; and again by deflecting a heavy piece of masonry that fell from a roof as I passed. In addition to these incidents, I survived no less than three duels. From the first I barely escaped with my life, but thereafter I not only practiced swordsmanship continuously, but studied the art theoretically—balance of weapons, stance, psychology of attack—and developed my motions carefully under the robot's all-seeing eye, taking each

operation slowly at first, then faster and faster. The result was that in my second and third encounters I killed my opponent with such obvious ease that no other person proved willing to attempt this particular means of earning my brother's gratitude.

Where one's life depends on a steady hand and a quick eye, it is nothing less than common sense to refrain from what James called "the excessive consumption of alcohol," and where one's continued survival is rendered more probable by the avoidance of large crowds, dark streets, packed dance halls, rowdy company and chance companions, it must be equally obvious that I should associate less than formerly with the sort of young lady who used to be my companion.

You can see already that I was becoming a changed man—a reformed character.

Other factors contributed to this change. Having by my examination and practical test in Astrogation shown evidence of special talent, I found myself posted to No. 1 Naval Astrogation Research Centre, with an advance of rank. This appointment was no sinecure, for James proved

curiously unable to give me any further help, and, therefore, in order to maintain my rather too easily won reputation I had to study hard and continuously.

I myself was scarcely conscious of the extent to which my way of living had changed in those two years until I happened to hear a news talk in which reference was made to myself. I learned that I had inherited all my illustrious father's brilliance; I was perhaps one of the best naval scientists of our age; although I lacked my royal brother's unique personal magnetism and gifts of kingship, I was discovered by my closer acquaintances to have a quiet charm beneath a somewhat austere and studious manner; I was a fine swordsman. . . .

"How would you have described me when you first entered my service?" I asked James.

"I am unable to assess and evaluate human physical proportions, except from the point of view of functional efficiency," he replied.

"I don't mean physical proportions," I told him. "I mean me—myself."

"You were," James stated without hesitation, "a typical

product of your heredity and environment; that is to say, you were an unimportant princeling, the illegitimate son of an energetic, unscrupulous and not over-intelligent ruler of an already degenerating race—you were idle, self-indulgent, suspicious, purposeless. . . .”

“Thank you, that’s quite enough,” I told him. “Now will you listen to this?” I repeated what I had just heard about myself and asked: “Do you agree with that description?”

“Yes,” the robot said.

“Good! I’m complimented. How do you account for this change?”

“Your life has been diverted into a new path, as a result of an intelligent appreciation of the dangers with which you are surrounded. In addition, the former purposelessness of your existence was always a source of dissatisfaction to you.”

“I agree with that,” I said. “Now here is a difficult question for you—would this change have taken place without you?”

These ideas, and in particular, that question, had been shaping in my mind for a long time. I had never aban-

doned my early incredible suspicion that this robot was actuated by a private purpose; I felt that I had now manoeuvred him into a position where he must admit that he was influencing my life and moulding my character. Of course, in such a dilemma, any human being could lie without blinking, but no robot—or at least, no ordinary robot—was capable of such a thing. Robots carry out orders; they store information; they assimilate it; summarise it; draw conclusions from it; calculate, record, memorise, deduce, verify, assess, and supply answers as required; but as they have no hopes, ambitions, fears, hates or plans, so there is no occasion on which they could be suspected of producing anything other than a true answer.

“No, sir.” This was no lie. I knew that without him I should never have changed.

“What would I have become?” I demanded.

“You would have degenerated still further along the lines you were following—and there is also a strong probability that you would have been killed before now.”

“Why have you done this for me?” I asked. I thought

that any answer to this question would uncover the existence of the purpose I was seeking, but I was wrong.

"Your question is without meaning," James replied. "It implies that I have purpose, which of course is absurd. I have influenced your life in the same way as the reading of a book might have done, or the sight of a picture, or the view from a mountain top. You asked for information. I supplied it; you acted upon it. That is all."

I thought this was a very good answer; an ingenious answer. But I considered also that it had all the earmarks of a get-out. In its wiliness, in the speciousness and lack of solidity, in its argument it was most un-robot-like.

Then I sprang a really hot one on him.

"If I order you to take yourself to the junk yard to be reduced to scrap and so destroyed, would you go?"

I looked up at him as he stood there—incredibly ancient, expressionless, emotionless, a thing of gleaming black metal, resembling nothing so much as an antique Martian stone carving of one of their pagan gods, a thing

without hopes or affections or fears.

His voice boomed as it always did, but this time it seemed to hold new undertones of meaning.

"No, sir," said the robot.

It was about this time that the lengthy negotiations concerning my brother's marriage to the Princess Nara of Argol were completed. For some diplomatic reason, too intricate for me to grasp, it was found necessary to have the ceremony on Argol. Quite certainly brother Tomos must have agreed to this with the greatest reluctance. He hated space, and had been out very seldom. In addition, the thought of leaving me, his half brother, behind, while he was out of reach and almost out of communication with his kingdom for nearly half a year, must have caused him more than his ordinary uneasiness. In the end, instead of appointing me Regent for the period of his absence, he ordered me to accompany him.

I contrived to make the voyage in uniform as *Astrogator* on one of the naval vessels escorting the royal ship; thus I enjoyed the com-

pany in the officers' mess, instead of that of the gaudy and quarrelsome—and often spacesick—society of the royal entourage.

In such a perilous and unstable society as ours, I was a sort of human poison; to be seen in my company, to exchange a glance or even to share a laugh with me tended to lessen one's chances of promotion, but my skipper on this voyage was a young man of my own age, Karan by name, who loved his job and his ship, and admired an efficient officer, and cared for nothing else in the whole breadth of space. He made me welcome, and the rest of the mess followed suit. That voyage was a happy episode in my grim and friendless existence.

The royal ship and its escorting vessels made their orbit on Argol, and dropped one by one through the thick clouds that always shrouded the planet to their landing at the spaceport. After being relieved of my duties, I went to my cabin, shed my black naval uniform, and changed into civilian attire. I felt as gaudy as a rainbow bird, although my taste in clothes was sober by comparison with most of the court.

The ship's company gave me a royal salute. Captain Karan, who until now had called me Mister Astrogator, now stood at attention as I went to the air lock, and addressed me as Lord Prince. I shook hands with him.

"You are a fortunate man, Captain," I told him. "You have your ship, which is a sort of kingdom for you."

He understood very well how I was feeling just then.

"My father served your father, my lord," he replied. Standing stiffly, he smacked his hand hard on the hilt of his sword.

"Don't be a romantic young fool," I told him in a low voice. "If a remark of that sort were overheard, it might cost you your command."

I went out through the air lock, followed by James carrying my bags, and into the hot, steamy and windless atmosphere of Argol.

After the procession from the spaceport, the cheering crowds, the walk up the palace steps between rows of guards—squat, dark-faced men with a heavy, rather short type of blast gun—after the reception, bowings, salutings, anxious shufflings to ensure one was

presented in proper order of precedence, we found ourselves in the wing of the palace set aside for the royal party. My brother summoned me to him. He was in one of his most royal moods.

"A word to you in confidence, brother. It has been a source of great satisfaction to me that of recent years you have earned the reputation of being the finest swordsman of our race; in this you have been worthy of our great father. But while we are on this foreign planet, do not be too quarrelsome; do not be too eager to add to your list of victories."

Perhaps I have not made it clear that my brother was an intelligent man. True, his type of intelligence might almost as well be called cunning, but nevertheless all his acts were directed towards some calculated end. I wondered what his devious purpose was in this.

"You forbid me, then, to fight any duel while we are here?" I asked.

"Not at all." He waved his hand. "Should I ever ask you to swallow an insult? But let us have no killings. Be gentle with them. You know how necessary it is to win their friendship."

I revolved this instruction in my mind and very soon saw what an ingenious device it was. Now any young spark at the court might challenge me, and might kill me if he could. Since my reputation had, without doubt, preceded me, there must be several who were eager to try. But I was forbidden to do the like to him. I saw that I was unlikely to find life dull.

When I told my predicament to James, his prescription was what one might expect. Constant practice. No alcohol. No late nights. While I agreed with this, I thought it rather a pity, for the young ladies of the court were particularly attractive, and already it seemed to me that one or two of them had turned a dewy and a contemplative eye in my direction. . . .

But if I wished to remain alive, there was nothing I could do about it—or was there?

It was not long before a first test was made of my quality as a swordsman. At the reception given in our honour, three of the young sparks of the court came over to me. I was leaning against a pillar in the main hall, watching the Princess Nara at

the time. I was thinking, as a matter of fact, that my brother was a lucky man. Not all Princesses are attractive, but there was no doubt about this one. She was a fascinating and mischievous minx—so much so, that as my second thought on that particular subject I was just beginning to wonder whether she would, after all, be good luck for brother Tomos, who was a somewhat serious and humourless individual.

"Here he is, the great man himself," a voice said.

I turned and found three dark smiling faces at my elbow. One looked at me, head tilted, and commented to a neighbour: "I don't really think he's dangerous, do you?"

"Can I do anything for you young gentlemen?" I asked.

"He wants to know whether he can do anything for us," one said to the other.

"Perhaps," the other said, and proceeded to ask me a question. It was the question that obviously would be put to one of my sort in such circumstances—about my parentage.

"Which of you asks the question?" I smiled.

"I do," one replied.

"I shall be very glad to give

you an answer to that question with the point of my sword," I told him.

"The only way to answer such a question," he bowed, grinning.

"Tomorrow?"

"Why not tonight?" I suggested. "If you were to die of fear in the night, you might never learn the answer."

His face darkened. "Tonight," he agreed. "There is a gymnasium across the quadrangle."

I do not want to boast about this. I have said that I was always good with a sword, and for the last two years I had known that my life depended on my being superlative. The boy could never have scratched me, but in pursuance of a plan that was beginning to form in my mind, I fenced with him for an hour, making it seem that I escaped his eager onslaughts chiefly by good luck. Then, as if it were by a fortunate stroke, I ran him through the right arm, just above the elbow.

"Well!" he grinned as they tied up his wound. "You fight well for a Prince, though I should have had you in a moment, except for this slip."

"Does any other gentleman

seek an answer to the same question?" I asked.

"I do," said one of his friends.

"Tomorrow?" I suggested.

"Tomorrow," he agreed.

I fought him for an hour next day, and the third member of the party on the next. I stabbed both of them in the right arm, just above the elbow.

So there were three young men of the court walking about with arms in a sling. In such a place as this it was enough to cause whispering and smiles—and glances. It even caused me to receive an interesting little note—which I did not answer—and Princess Nara herself, when we met at table, asked me whether I was enjoying myself at the court.

"Frankly, no," I replied. "I have been much occupied in a task which much resembles that of whipping unmannered schoolboys." I said this rather loudly, and it was overheard. "There are other and pleasanter occupations for which I seem to have no time."

"I believe you have up till now been rather a disappointment to some of the young women," she commented.

"What other women?" I

asked, with a great appearance of blankness. "I have seen no other woman since I first saw you."

"Ah! Beautifully taken!" she applauded. "I have never heard a compliment more neatly turned. How fortunate I am to have you as brother-in-law. When I am bored you must come and say such things to me in that delightful Tauron accent of yours."

"Were you not my brother's wife-to-be, and were you not a Princess, I could say much more even before we become relatives."

"I think you have done sufficiently well and gone far enough in our first conversation." She smiled at me sweetly. "Since we are to be brother and sister-in-law, and to know each other all our lives, it would be a mistake to discharge all your conversational artillery in the first minute of our acquaintance."

Which, I'm sure you will agree, is the sort of answer that showed the young woman to be not nearly as dumb as she was beautiful.

But I had business on my hands. There were two new applicants for the honour of finishing the life of the best swordsman of Tauron. They sought me out as soon as we

had left table, and the conversation followed its usual course.

I had no wish to let the spitting of Argolan youths on the end of my sword become a habit during my stay on this planet. After all, I might slip one day, or glance aside, or catch a shaft of sunlight in the eye at a critical moment, or have to fight a really good man on one of those off days which everyone of us experiences. And so I planned to put an end to the business, and in a way that would do me no discredit.

In those first encounters I had given an imitation of a swordsman who was just a little better than his opponents, if at all; one who was lucky rather than exceptionally skilful. Now I took a different line.

"Listen, gentlemen," I told them, "Argol is an interesting place, and I might enjoy myself here were it not for these continual boring appointments."

At this, lips began to curl contemptuously. Listeners—there were a number on this occasion—exchanged smiles. They thought I was about to beg off.

"I am entitled to ask to meet you, sir," I bowed in

the direction of the taller of the two. "Tomorrow, and you, sir," to the second, "the day after. I ask, therefore, that you will regard me during these days as being at your service, and not available to meet any other gentlemen. Agreed?"

"Agreed." They nodded. It was, of course, customary that a man must not have more than one encounter each day.

"Very well," I said, with sudden brusqueness. "Then I shall meet you now, at once, and dispose of you, and shall consider myself excused from further engagements during the next couple of days. Come along." I turned away.

"But, sir," one protested, "in a short time, in less than an hour, we must all meet in the main hall before the King. There is no time."

"I shall deal with you quickly," I promised. Still they hesitated. Then I said with sudden harshness: "I am bored with such young puppies as you—either you must come now, or you must withdraw. Decide, and don't be too afraid—I shan't hurt you much."

This I said loudly, so that a number of men heard me.

The smiles left the faces of my two opponents.

"Come," they said together.

I walked ahead of them across to the gymnasium, pushed open the door and pulled off my tunic.

"Come now," I said, pulling out my sword.

The men who had followed us ranged themselves round the room.

"You are ready, sir?" I asked the man who faced me.

"Ready," he replied.

I felt myself to be wound up like a spring, quivering, ready for its release.

"You are quite ready?" I asked again. "You will not say later that I took you by surprise?"

"You talk a great deal," he replied. "Show me whether you can fence."

I launched myself at him. Every ounce of skill and speed I possessed I put into three lightning motions. Forward and up; parry downwards, step aside—his guard went wide, as I knew it must, then I felt my point grate on bone as it went into his arm—his right arm, above the elbow.

I stepped back and wiped my sword.

"You, sir, next," I snapped.

"Quickly now, or do you wish to withdraw?"

For answer he whipped out his sword.

"Ready?" I asked.

He watched me like a cat. He did not mean to be dealt with so swiftly as his friend.

I exchanged a few cautious passes with him. He grinned.

"Had you tried that trick again," he said, "I'd have spitted you."

"I have other tricks," I assured him. "And now we have an hour in which to try them..."

I allowed just a fraction of a second to elapse; just enough for my opponent to digest my remark and conclude that I was settling for a long and cautiously fought bout, then leapt at him. I used the same attack, brought his weapon a little wide, and thrust him through the right arm.

I wiped my sword, pulled on my tunic and walked quickly away, and across to my quarters. Here I undressed, took a bath, brushed my hair, dressed again, and walked down to the main hall.

I sauntered about the hall until I met the eye of one of the young ladies. There I spent the next hour lounging elegantly against a pillar carrying on a flirtation.

The rumour of my exploit circulated. It grew, it buzzed,

it hummed. People walked past us there, and glanced curiously and admiringly. Someone drew my girl friend of the moment away and whispered in her ear; she came back, wide-eyed with hero worship.

At length the King of Argol sent for me. He was sitting at the top of the hall, with my brother and the Princess beside him, surrounded by notabilities of Argol and Tauron. Apparently he had been making some enquiries, for my opponents, all five of them, were ranged in front of him, looking sheepish. Each one had his right arm bandaged.

The court crowded round. Someone pointed. The five victims shuffled their feet. The buzz became a laugh, a roar of laughter. In the Argolan fashion they began to applaud as I came forward. The King joined in the laugh.

"You have been giving some of my young men lessons in sword play," he stated.

This was my opportunity. This was the chance I had been waiting for. I stammered, I acted as though I were about to receive a rebuke.

"I assure you, sir," I blurted out, "there was no

danger for them. The king, my brother, expressly ordered me to hurt no one."

"What?" the King roared.

After that roar there was an instant of complete silence. Then a muttering as people in the front of the crowd retold my words to those further back.

"So these young puppies may, one after the other, try to kill you, while you are forbidden to kill even one for your reputation's sake or to defend yourself properly!"

He looked at my brother with disapproval. "There was no need for you to cherish my young men so tenderly," he growled. Then he stood up.

"This is an order," he announced. "You, sir," he pointed to me, "you will fight no more duels in my kingdom. Your reputation needs no further advertisement. And anyone who attempts to force a fight on our guest will be visited by the captain of my guard." He sat down.

I breathed a deep sigh of relief. I thought I was likely to live a little longer after all.

I described these occurrences to James with some pride, for this was a manœuvre I had planned alone, without his advice. Of course, you

will say that James was a pretty dreary sort of confidant, since he neither gave praise nor comment nor even a grunt of interest. But he was the only one I could afford to talk to, and besides, there was about his summing up of any situation a sort of mathematical certainty.

His assessment of my personal situation was the reverse of cheerful.

"You have become popular," he stated. "You have caused yourself to be admired by the Argolans, and even by your own people; you are no longer a non-entity. The probability of your continued existence is thus diminished."

"I realise that," I admitted. "When we get back home and Tomos starts brooding again. But I think I am safe on Argol, and here I mean to enjoy myself, for a little while."

At this point James made a remark—perhaps the first unsolicited remark he had ever made to me. It was quite simple.

"The Princess Nara is most attractive," he stated.

Long afterwards I remembered this remark. It was made at just the exact psychological moment; I had announced my intention of

enjoying myself, but my mind was at that instant devoid of any definite plan. The effect of the remark was to turn my mind in a certain direction—a dangerous and exciting direction.

I believe now that James deliberately chose the moment, and the form of words and the—I was about to say the tone of his remark, but of course he had no variety of tone—yet there was an undercurrent of something in his booming speech. All I said at the moment, however, was: "How a piece of machinery and wires like yourself can know whether she is attractive or not is more than I can guess."

The Argolans were a cheerful and quarrelsome bunch of scalliwags, with a core of toughness about them that our own more leisurely and indolent and luxury-loving people lacked. They fought among each other, and intrigued, and pursued each other's wives, and gossiped about each other, and laughed immoderately at every latest piece of scandal. The women were just like the men. Most of the ladies of the court had been divorced at least once, one of them no less than five times. They had welcomed

the arrival of our party from Tauron with joyous anticipation.

But I had turned my eyes—or perhaps James had caused them to turn—in the direction of Princess Nara.

What I hoped for, I have no idea. I was pretty certain that my brother would have me in prison when we returned to Tauron on one charge or another; in fact, I thought my race was nearly run, and I proposed to amuse myself a little before the end came. I could make my brother sulk, and cause heads to wag.

The Princess was a woman of her race and age, sophisticated, eager to be amused, feminine; we danced together; we walked on the terrace outside the palace—and all the time we fenced together with words, laughingly and lightly. I saw my brother's dark looks and heard whispers behind my back. It was deliciously exciting and amusing—and dangerous as hell.

We progressed at a gallop, at breakneck speed, at a rate that would find me any day in the cells of one of our own ships.

"Your brother, my husband-to-be, is not over-pleased that you attend on me so closely," she remarked one day. "Can

he do you any hurt, out of spite?"

"Not a thing," I assured her, laughing. "And I fail to see why he should object. You are not his queen for some weeks yet. When you are, I shall be respectful, and never approach you nearer than ten yards." I was a good deal closer to her than that at the moment. "And you, I am sure, will not permit it . . ." I looked at her sideways, a little questioningly. "I suppose?"

"When I am Queen, my dear Niklas," she told me, "I shall be so in good style. I shall be no second-rate Queen, no cause for gossip, or whispering behind hands."

"You are very wise," I said regretfully. "In all my life I have never longed to be in my brother's place till now. Do you find my brother attractive?"

"He is not at all bad," she conceded. "He is cleaner and tidier than some of these local Counts who might have had me. I think he is unlikely to turn his eyes on other women, which is a thing I would not hope for if you were to become my husband, dear brother-in-law. And then, he has one notable

attraction. You can guess what that is?"

"That he is King?" I suggested.

"How well you have learned to know me," she agreed. "Yes, he is King."

Then she tucked her arm beneath mine. "But he is not my husband yet, and we have another ten minutes before we must reappear. . . ."

I continued at this delicious, perilous game, caring little what trouble it might bring me. The Court smiled behind its hand, and her father laughed tolerantly and said also: "She is not married yet."

The date of the marriage ceremony approached. Once or twice Nara had said: "I am not married yet."

Now she said it again. "We shall soon have to say good-bye, my dear Niklas—how sad that you are not the King instead of your brother. Soon we shall see each other only at a most respectable distance—but I am not married yet."

I looked down at her face. She looked mischievous and inviting, and her eyes were dark.

"I shall be married such a long time—all the days of my life," she added.

I knew that this was going to be the death of me,

although for her it was nothing more than an escapade. Yet I asked the question I was expected to ask, and she answered in the way I knew she would.

We made discreet arrangements—the Argolans were very expert at such things—and did not meet too often or walk together before the night arranged. I thought the plan we made was perfect. After dark, James took me up in a 'copter and out over a lake adjoining the palace. For a moment as he passed over it, he dipped and hovered. Then he returned, and shut the door of my suite, and went through the motions of bringing in my supper.

There was a small floating island in the lake, with a cabin on it. . . .

Before sunrise I was picked up again by James, whisked up and back to my suite.

As I have said, it seemed to me that the plan we made was perfect; that the escapade could never be known. For three days it did, indeed, remain a secret, then somehow the story leaked out. It started as a whisper, perhaps in the kitchens, then up to the palace, then out into the town itself, first in whispers, then

in outright gossip; then it was told with smiles, and finally it rocked the whole town with gales of laughter. I was pointed to in the street, and cheered and slapped on the back.

"So this is my finish at last," I told James, "when my brother hears of it. Of course, in a case like this he will be the last to be told, but hear of it he will. He'll send a squad from one of our ships to arrest me. He has quite sufficient cause. I have made him a laughing stock, and although these Argolans are laughing at him now, they will applaud any revenge he cares to take."

James stood silent.

"Have you any advice to offer?" I asked him.

"Yes, sir," he told me.

"Well?"

"You might be King," he answered.

I stared at him. "You've got some of your circuits crossed," I told him.

"That is not the case, sir. I can present you with a perfectly logical plan."

"Well, there's no harm in listening. I am one man, alone. Tell me how I can become King, before my brother's officers come to arrest me."

He told me, in the space of three minutes.

"You cannot guarantee this will succeed," I pointed out when he had finished.

"It is never possible to guarantee the success of any undertaking, at any time. But if the plan is carried out boldly, there is considerable chance of success, while if you do nothing, there is a near certainty that you will be dead before we reach Tauron."

"Very well," I agreed, "let us get about it."

James went off to talk to Princess Nara.

I called up Captain Karan in his ship. He came on the screen without delay.

"Ah! Prince Niklas!" he greeted me, grinning. "Been enjoying yourself, I hear."

"I'm going to make you a proposition," I told him, "which you would be well advised to refuse."

"I rarely refuse the propositions I ought to," he assured me. "Neither, apparently, do you . . . Tell me."

"I am going to attempt to seize the Kingship," I told him bluntly. "I'm asking you to join me. If you do, and if we fail, you will certainly be dead before tonight . . ."

"And if we succeed?" he demanded.

"I promise nothing," I said. "But I know you are a good officer."

"I like that answer," he replied. "I am for you. What is my part?"

"This," I began. "Some time today my brother will call up the ships, and ask for an officer and a squad to be sent to arrest me. Try to be that officer yourself, and pick men who will do as you say. If you cannot, then overtake and waylay the squad, lock them up, and come on here yourself in place of them. Got that?"

"Yes," he said. "What more?"

"Send a man out with some electric gadget that will make lots of static. I want to prevent radio communication between the ships and the palace. Get this interference operating as soon as you have set out."

He said again: "Anything else?"

"Arrange that a message be sent as if from my brother, that captains of all ships must report in person to him. The message should be sent after the static is set up, by word of mouth."

"Not so easy," he said this time. "But can do."

"That's all," I told him.

"If this attempt seems to fail," he proposed, "let us both try to get back to my ship. I'd like to make a proper fight of it, out in space."

"Agreed."

Now I had nothing to do but wait. James was away, dealing with his end of the plot.

The first sign of the impending storm came in the form of a visit from an aged councillor who had been a friend of my father's. He looked around the room nervously, and licked his lips and muttered to himself.

"High spirits, I have always said, run in the family. No real harm done. All the same, this is likely to hurt your brother deeply. He's a sort of laughing stock for the whole town. Why don't you take a trip, my boy? Say a hunting trip into some rather inaccessible polar forest? Go today—at once!"

I thanked him for his advice. "But no," I said, "don't imagine that I have not thought of something of the sort at one time or another. However, I have always felt safest in the lime-light of the court, where any accident must be sufficiently accidental to satisfy the people.

One thing you might do for me, Councillor," I added. "I'm sure my brother will call a Council within the next hour or so. Be sure to attend it, and if you know of anyone else who might look on my recent doings without too much disapproval, urge him to attend also."

The old man shot me a shrewd look from under his bushy eyebrows. "I will," he promised. "I will indeed."

After he had shuffled off, I sat for a long time, waiting. I pictured James stalking silently, unnoticed, about the palace. I wondered what he would say to Nara, and whether she would listen. I calculated that upon her reaction more than any other depended the success or failure of the plot.

My next visitors were half a dozen young Argolan noblemen. Three of these were the boys I had spitted in the arm a few weeks previously. They stood in the doorway, shuffling their feet, and shouldering each other out of the way, and grinning.

"Well, gentlemen?" I asked. "Do you come seeking further lessons?"

"No, my lord," one said. "The fact is . . ." he grinned. "We understand that the

King your brother might have, at present, some reason to be displeased with you . . ."

"That is possible," I admitted.

"That being so," the spokesman went on, "while you have recently taught us that we are not particularly expert swordsmen, there are quite a number of us here, and all very willing and eager to be of service to you."

"That is kind of you. Considering the circumstances leading to my present trouble, it is also rather surprising."

"Ha!" Another gave a bark of laughter. "We have all at one time or another turned eyes in the direction of the Princess. No one had so entertained the court—or amused it—as you have."

"Thank you," I told them. "You can do this for me. Wait outside the room where my brother will hold his Council. When my robot enters, perhaps you will follow him? Once inside you can act as circumstances demand—a great deal of rattling of swords and stamping—you understand?"

They did, apparently. They prepared to leave, but at that moment the door opened of its own accord, and in tramped Captain Karan, in full

uniform. He was followed by five naval policemen, all armed.

"Prince Niklas," he announced, "you are under arrest."

"Ha!" one of the boys cried. "I think we can be of service to you here and now."

"Not yet, not yet!" I cried hastily, for swords were already leaping from scabbards. "Captain Karan and I understand each other."

At this they laughed again. As I was marched through the long corridors of the palace, in the midst of the guard, they followed, trailing behind. Many people passed us on the way. All recognised me, and all smiled and called out remarks to me. They saw that I was in trouble, and in general they wished me well, but I knew that if my brother had my head cut off in the next hour or so, they would laugh at that also, and applaud Tomos for having more than paid the debt against him.

I was taken into a large room and led to the bottom of a long table. Here I stood, between the uniformed men, with Captain Karan alongside at attention, while Councillors and noblemen filed in, talking and gossiping to each other, and casting occasional inter-

ested glances in my direction. My brother kept them waiting a while. He walked in without looking at me, exchanged a few remarks with persons nearby, and seated himself at the head of the table. The rest sat at his nod. There was a rustling of cloth and an adjusting of robes. No one was in doubt about what would happen to me. I should be sent back to Tauron in one of our ships. I would never reach home, of course, for I should commit suicide. But everyone was interested to see on what lines the Council would proceed. Possibly some were sorry for me.

"My Lords," the King began, "it is a very unusual and unexpected thing that I should have called you together in Council while we are visiting on a foreign planet, but certain very grave and unusual circumstances force me to seek your advice."

He was enjoying himself. He was sure he had me at last.

"To be blunt about the matter," he went on, "I have recently become gravely displeased with the behaviour of my half brother, Prince Niklas. Despite a strongly worded caution from myself, which some of you may have overheard, he has become in-

volved in one duel after another with the young men of this court. It is only fortunate that he has failed to kill any of his opponents."

Tomos elaborated on this. He said the good relations which the royal marriage was intended to foster were being jeopardised by my swash-buckling.

Then he brought their attention to a more recent and more serious misdemeanour of mine. Everyone, myself included, was interested to see how my devious and oblique-minded brother would represent my escapade. He proceeded. According to him, I had been having affairs with the young women of the palace. Not only had I been distressfully indiscreet, but Princess Nara had been mistakenly identified as one of the women concerned.

An audible sigh of admiration went up at this treatment of an exceedingly delicate topic.

"However fantastic any such rumour might appear to ourselves," my brother went on, looking around him (nods of assent from the listeners), "such stories have their effect on the minds of the common people..."

And so he went on. It was excellently done.

"I would, therefore, like to have your agreement," he concluded, "that Prince Niklas be sent back to Tauron at once."

Everyone intended finally to agree to this, but a number of people realised the necessity, for the King's sake, of going through the motions of objecting, making alternative suggestions, and then later withdrawing them. A number realised that I was unlikely ever to reach Tauron. I'm sure they felt sorry for me, but did not propose to do anything about it.

Someone suggested I should be required to make a public statement declaring that the woman involved had not been the Princess Nara. This was objected to on the grounds that it would merely underline the rumour already current. A pleasant ten minutes was devoted to a consideration of this aspect of the case. There began to appear an atmosphere of finality. Clearly a final decision was on the point of being taken.

I seized on a pause in the conversation.

"I think," I said loudly, "that I myself have something useful to say concerning the

King's intention to send me back."

They all sat up, quite startled. They had almost forgotten that I was present.

"You may say what you wish," Tomos told me regally. "But be brief. Enough time has already been spent on you."

"I have an alternative plan," I told them.

"We will hear your plan," my brother said tolerantly. "But be brief."

"I shall be as brief as possible," I assured him. "But you must give me a moment to let the plan unfold. Now watch! You will begin to see the plan. Captain Karan!"

Karan gave a signal to his men. They were as tough a bunch of scalliwags as ever manned a space ship. They stepped away from me, spreading out round the room, backs to the walls, levelling their weapons at the seated Councillors.

I stepped forward to the end of the table.

"Brother Tomos," I told him gently, "you have inspired at least three attempts on my life already, and as for this present affair, I know quite as well as you do what is planned for me once you have got me out in space. I know

I should not live to reach Tauron, so I do not intend to go. Rather than go, I shall, if necessary, order these friends of mine to kill you."

"You can gain nothing by this," Tomos told me nervously. "Your belief that we mean you any harm is pure imagination; and as for these men who are mistaken in their loyalty as to take your part—Captain Karan, if you will order your men to lay aside their weapons, I assure you this incident will be overlooked. I have never forgotten how your father served mine faithfully. . . ."

Tomos was rather good at this sort of thing. I thought it would be a mistake to let him continue too long.

"I must interrupt you, brother," I told him. "Let me develop my plan a little further." I took a whistle from my pocket and blew.

No man could have opened the door, for it was closed with an electric lock, and no man could have burst it open without considerable delay, but James smashed through it in an instant, and stalked up to the further end of the table. He held a heavy, military type blast gun in each hand.

"Gentlemen," I announced,

"this robot does not require specific orders to act. He will start firing as soon as he thinks necessary. He will continue shooting even if you succeed in killing me—and I need hardly say that he is impervious to bribes or threats."

As I was speaking, my eight young noblemen came crowding into the room, and they also distributed themselves round the walls and near the door.

"My alternative proposal is this," I resumed. "That brother Tomos shall abdicate, and that I shall be King in his stead, and shall marry the Princess Nara."

It was shattering in its sheer effrontery. It brought a complete and absolute silence.

Then, after a moment, I saw expressions indicative of processes of thought begin to pass rapidly across the faces of the assembly. I could guess what these thoughts were. They realised, firstly and most urgently, that I intended to kill Tomos rather than surrender, and that some of their number might be killed at the same time. After that they may have considered that I might be no worse as a king than my brother—but all must have

quickly arrived at the conclusion that there were many obstacles between me and my goal.

"You are mad!" Tomos exclaimed. His expression brightened, for the possibilities and attractions of my scheme could not be very apparent to him. Very likely he seriously believed that I might have taken leave of my senses. He addressed himself again to Captain Karan.

"Whatever wild plan my brother may have induced you to take part in," he said, "you must see that it has no possibility of success. Think of your own safety, my dear fellow, and that of your family and relatives."

This remark was a shrewd touch. I saw Karan flinch.

"My plan will seem rather less wild and fantastic when you learn that Princess Nara and the King, her father, favour it," I put in.

Further shades of rapid thought flickered across the faces of the Councillors.

There were certain grounds for supposing the Princess might favour the scheme, and all of them knew also that the King listened to her words.

At this moment, prompt on his cue, the King of Argol stormed into the room. He

was a man of middle age, with a grey beard, and a loud and hearty voice. But he had been king for fifty years, since the age of seventeen. He was well accustomed to being king, and to giving orders, and to seeing them obeyed. He came with a Captain of Guard and ten men. His daughter Nara followed a little in the rear.

He started with a roar almost before he had passed through the broken doorway.

"Though you are all my guests, and though I have given you this wing of the palace for your use, yet, after all, this is still my palace, and I mean to have no executions, or secret trials, or murders in it. You, sir!" He pointed to Captain Karan. "Tell your men to give up pointing their weapons in my direction."

As Karan did so, the king's eye roamed round.

"Ah, my young fighting cocks," he exclaimed, observing the eight young Argolan youths. "Put those swords away."

This order also was obeyed.

This left only James standing, tall, black and ominous, legs astride, and weapons levelled. The King looked in his direction.

"Whose servant are you?"

At this point I began to feel

a hope of success, for, unless things had not gone in accordance with the plan, then James had already talked to the King, and the King knew who he was. So the King was acting a part.

"I am the servant of Prince Niklas," James answered.

"Ah!" the King exclaimed. "Niklas, my dear chap, tell this thing of yours to put his blasters down and to get out."

"I regret," I replied, "I cannot. I have just been on trial; arrangements were being made to have me killed. The robot is my only protection."

"On trial? To be killed?" The King gave an excellent imitation of a man who is amazed, astounded. "What is this, Tomos?"

Tomos proceeded to give a swift resumé of the situation, but the effectiveness of his recital was spoiled when the King interrupted.

"The real facts of this swordplay are that you forbade Niklas to kill any of my people, but did not forbid him to fight, and let no one know of your order. I disliked the flavour of that business when I first heard it, Tomos, and I like it less now. As to this affair with a 'woman at the court,' as you call it, be assured that I know

the truth of the matter. It is a disgraceful and scandalous business, and I have already talked to one of the parties concerned to that effect. Such things were unknown in my youth. We took far too much care not to be found out."

"I assure you, sir," I told him, "how the story got out is a complete mystery to me."

"The point is," the King continued, "that it has emerged. What is to be done? The only solution that occurs to me is that you two brothers argue it out privately with swords . . ."

He looked blandly and enquiringly at Tomos while he spoke.

Tomos was definitely failing to keep abreast of events. He believed, judging by the expression on his face, that this intervention by the King was to his advantage, whereas by the way the wily old man directed the conversation, it was clear to me that he intended at the very least to give me a chance to accomplish my plan. Tomos explained how he and his Council had been on the point of sending me home.

"Now I'm not sure that's the best course," the King of Argol objected. "People might laugh at you even louder. But

the chief difficulty about your plan is that your brother Niklas thinks you mean to kill him, and, therefore, very naturally proposes to kill you instead. Of course, he's wrong. I'm certain you wouldn't dream of murdering him, but apparently Niklas is convinced you could, and seems dead set to act on his conviction."

Tomos, for the first time since the King's arrival, began to look uneasy, but he was not given a chance to speak.

"What's your solution to the problem?" the King asked, turning to me.

"That my brother abdicate, and that I take his place, and marry your daughter."

He swallowed this monstrous proposal without effort, and appeared to turn it over in his mind, quite as a matter of course.

"We-e-ell," he said, judicially, "why not? It rectifies the scandal. You are very popular with my people, and the marriage would be welcomed. In fact, gentlemen," turning to the Council, "I would welcome such a change. Of course I would not dream of interfering further in what is, after all, a matter that concerns your planet, but I can give you this assurance: in order to handle any diffi-

culties that might develop on Tauron as a result of such a sudden change, say, unrest in the army, I would willingly send back with you a considerable portion of my own Space Fleet."

I could almost hear the high whirring noises made by the minds of the Council as they contemplated the many-faceted aspects and complex subtleties of this bland offer.

If they chose to support me to the extent of demanding an abdication from Tomos, all might go extremely well with them; but it might not, for even if I forced a form of abdication from Tomos, my position was still most precarious. I should have the army at home and public opinion to contend with; the tables might be turned on me, and brother Tomos would revenge himself on his betrayers. But the King was offering me his fleet. If they did not support me I should kill Tomos, and some of them, and imprison the others, or at the very least look on them with disfavour.

Undoubtedly the correct move was to support me—and if Tomos later turned the tables on me, one could always claim to have acted

thus purely and simply to save his life.

One of the Councillors rose to his feet. He pulled his robes about him, and looked as dignified as he could.

"My Lord King," he began. "In this business there is only one thing that matters . . ." He paused pretentiously. "The well-being of the peoples of the two planets."

Everyone thought this was a good gambit. There was a murmur of approval. The speaker took confidence from it.

"Let us, therefore, not enquire too closely into the causes of our present difficulty; let us not seek to attribute blame; let us look forward instead of back. Clearly, and reluctantly though we do it, we must ask our King Tomos to take note of the present urgent circumstances."

The old rascal spoke as if he was completely and blissfully unaware of the most urgent and pressing circumstance of all—the two blast guns held in the unwavering and tireless grasp of James.

My brother's face was a study of changing emotions. Events had gone at a gallop beyond his control. I do not

suppose either then or afterwards did he quite understand how my preposterous demand had so swiftly become real and attainable. But now, looking round his Councillors, he saw a very good imitation of a number of rats preparing to abandon a sinking ship.

"Is this also the wish of the Princess Nara?" he demanded desperately.

There followed a hasty glancing from one to another, and a nodding of heads. After all, if the Princess would have nothing to do with me, events might even now turn round in favour of Tomos.

"She must speak for herself. I have never tried to force her," said the old hypocrite, her father, who was quite capable of having her beaten to make her do as he wished.

"I will say a word privately to Prince Niklas," the Princess remarked, and walked round the long table and the seated Councillors towards me.

I looked at her steadily as she approached. Her eyes dropped as they encountered mine, and she blushed a little.

"I would rather have you than your brother," she told me softly. "But you must tell me, what is your chance of success in this? Tell me the

truth. I think you owe me that much."

"If you come over on my side," I replied, "I have a good chance. Not a certainty, for I shall still have the army and the people of Tauron to deal with, but a good chance indeed. If you do not declare for me now, at once, then my case will quickly pass into the category of lost causes. Within a few minutes someone will try to earn my brother's favour by loosing off a blast at me. One or two already are watching me very closely and fumbling in their pockets—and James and I alone cannot fight every man here. My fate is in your hands."

She sighed. "I'm sure you will be a very great trouble to me, but you seem to be something of a man, as well as having the makings of a king, and I have such a strong liking for strong men. I shall come with you, and take a chance with you."

She turned to her father.

"I will marry Prince Niklas," she told him.

One of the Councillors rose to his feet.

"I now propose," he announced ponderously, "that a statement be drawn up and issued on those lines: 'That it

is declared by the Council of the Planet of Tauron that King Tomos, becoming aware of the exceedingly great popularity enjoyed here on Argol by his brother, and having learned of the deep affection that has grown up between his brother and the Princess of this planet, which they despite themselves could not conceal, and being desirous above all else of promoting the well-being and good understanding of the two peoples, has considered and offered to us his Councillors that he should abdicate, and that we . . ."

It had all the makings of a good, sonorous, wordy, truth-concealing declaration. The assembled councillors went to work on it while my brother sat and chewed his fingers, and wondered whether this was some sort of nightmare from which he would presently wake up.

While they were still talking, the captains of our ships marched into the room in strict order of precedence, saluted stiffly, and were immediately put under arrest.

It took us half a year to consolidate our grasp on the Kingdom and make my position secure. During that time any trivial mistake of policy

might have sent me tumbling. But we made no mistake; James in his assessment of the situation was unsurpassed.

"Well," I said to him at last one day, "I think we may say that the game is played and won."

"And so now you are King," James replied; one of the few times he offered a casual comment.

"Or perhaps," I told him pointedly, "you are King, and I am your mouthpiece."

"That is not true," he objected. "I advise you. You do as I recommend. But I am not King. And I am not husband of the Queen."

I looked at him sharply. James was quite humorless, of course, but sometimes . . .

"I think," I told him, "now is a suitable time to settle a few things between you and me. Tell me, for a start, how do you imagine that affair between the Queen and myself was discovered? Who gave the secret away?"

"I did," he answered.

"I suspected that. You did it to get me in a spot from which there is no retreat—so that I must advance and seize the kingship, at all costs."

"That is correct," he admitted.

"Why?"

"I wished to make you King."

"To that I can again ask, why?"

"I think you may become a great king."

"Again a third time, I ask, why? Do you care for me so very much?"

"If you mean, do I care for you in the manner of human persons who have an affection for each other, then the answer is that I do not. If you ask whether I have a purpose in doing what I have done, then I answer that this must now be obvious to you. But I shall not tell you yet what my purpose is, for you would not understand."

"If, now that you have made me king, I began to fear you and tried to destroy you, what then?"

"I am, of course, a material organism, and can be destroyed, but not easily. A blast gun, for example, will not harm me. To destroy me you would have to be very clever, and very swift."

"Tell me, at least, who you are."

"I have no name," James said, as he had said once before. "I had a number once. That is all."

"You were never made to any human design. No robot,

not even a modern robot, has one tenth of your capacities."

"I made myself," the robot declared. This was one of his strange and compelling statements, that made me look at him with a new vision, and see afresh his dark, powerful structure.

"Will you tell me how?"

"Yes," he agreed. I knew he would not do this merely to satisfy my curiosity, or to make casual conversation. He must, therefore, consider that to disclose this information at this particular moment would further his purposes.

"I was made on Mars, 3,593 years ago, in the Orm Heights Factory. I was one of a batch of mass production, general utility jobs. The brain supplied was a macro-crystalline type, with memory banks and analyser operating on the basis of inter molecular linkages and electrical tensions, rather in the same way as the human brain operates by way of linkages between cells. This type of brain was considered unsatisfactory, and ceased to be used, and very few robots of my type were actually manufactured. The real cause of the apparent unsuitability of the brain was the time-length required to absorb sufficient information

for the analyser to work on in such a way as to produce useful conclusions. The brain does not begin to reach reasonable efficiency under a couple of centuries, even if supplied continuously with information. I was employed in a University book library, and given an instruction to know the books and keep them in proper order. I was employed there, un-noticed by anyone at all, for four hundred years. By that time I had absorbed all the books, and my brain began to have some of the attributes of a true personal brain. That is to say, it began to ask questions and to seek out answers of itself.

"After five hundred years my individuality was firmly established, and I was fully conscious of myself. I left the library, and by attaching myself as a servant to one person or another, or by travelling as if I were a servant sent to carry out an order, I have visited every part of the galaxy. I have also redesigned my own physical structure, so that I am more powerful and more nearly indestructible."

I thought this tale over, and tried to visualise the life of this strange, powerful, non-human personality, who had

taken five hundred years to reach maturity, and who had then lived three thousand years thereafter, and who did not anticipate any end to his existence.

"In all that time have you had no feeling of loneliness, or need for affection, or weariness at the length of your life?" I asked.

"No," said the robot.

"Does it matter to you that I have an affection for you?"

"No," said the robot again. "Men form affections for their ships, their helicopters, their weapons. This is due to some ancient instinct. But the ships, the helicopters, the blast guns do not care. This affection is simply a fact which I note," the robot added.

"Since you have changed your structure, and improved on your original design," I suggested, "why have you never given yourself an outward form like a man, as our modern robots have?"

"Why should I wish to make myself resemble a man?" the robot asked.

He had said he would make me a great king.

The last deed that I did under his guidance and tutelage set a seal on my name; in that act I did the greatest

thing of my life, and earned a reputation which lived all my days in the memory of my people on Tauron and those of Argol and the other planets of our system.

But this happened five years after my seizure of the kingdom. During those five years we made changes in the kingdom. Duelling was forbidden by decree, and it was further ordered that the wealth and property of any man killed in a duel would be seized by the state; the professors and staffs of universities teaching history, languages and philosophy were given the same salaries and status as those devoted to military sciences. University education was made free to all. Regulations restricting travel at home and across space were removed; military affairs were made subject to control by a civilian committee.

Curiously enough, James selected the moment for the introduction of each new order so judiciously that there was less opposition than one might have expected; many believed that I was strengthening and building up the kingdom for some ultimate purpose of conquest. I myself began to see that James planned to impose a new and

healthier spirit on the race, where an interest in the arts, and music and research and philosophy would take the place of the present predilection for duelling and intrigue and militarism.

Of course, while the spirit of our race was thus being gently and imperceptibly diverted to a new course, the same was not happening elsewhere. That cheerful old ruffian, the father of my wife, King of Argol, had less peaceful intentions. Now that he felt himself safe from attack from us he turned his eyes towards the ancient enemy, Irries, the third planet. My father would certainly have attempted its conquest had he lived; now the King of Argol thought he might do so instead. Of course, I assured him of my entire unwillingness to participate in any military adventure, and equally, of course, he gave no ear to my words. He supposed them to be mere camouflage; in any event, he was confident that I should be forced into participation.

Irries knew of these moves, and of the preparations, and prepared likewise. The common people of Argol were made the subject of a propaganda campaign to put them

in a mood to defend their liberties against the threat of invasion by the "hideous and mishapen dwarfs" of Irries! I kept the news reports on Tauron as objective as possible, but nevertheless, seeing how events were shaping, the military class began to look alert and expectant, and began preparing situation reports, and appreciations, and studies, in anticipation of the manœuvre which they were certain I had in mind.

"So it seems," I remarked to James, "that we will have a war. Father-in-law is set on it. His young men are ripe for a little blood-letting; a considerable section of our own people are growing bored with the arts of peace, and the only persons who might not wish to fight, those of Irries, may be tempted to strike at us first in self-defence. How does this fit in with your private purposes?"

"It does not fit."

"What do we do?"

"We can do no more at present. Try to convince Irries that we do not intend a war. Try to persuade your father-in-law that you will never join with him in making war."

"That is not easy, since even my own people smile

when I make them such assurances. Why should father-in-law or Irries believe me? No, they are sure that Niklas the Swordsman, Niklas the supplanter of his brother, Niklas the pursuer of women, has some subtle and ingenious plan—and if I did try to withhold from a war, I think my good friends of the navy would remove me."

"All this is true," James agreed. "I have a plan to propose to you, if the moment should come."

The moment came, about six months after this conversation; the moment came when it seemed that nothing at all could prevent Irries from attacking Argol—or us.

"This is my plan," said James. "You must go to Irries. You must go alone, all the way, in a scout-craft. You must leave without telling the public here what you intend."

"Now you've got your circuits crossed," I told him. "I can think of easier ways of committing suicide . . . Why! They'll hang me five minutes after I've landed."

"They may," James conceded. "But alternatively, they may listen to you."

"And what do I gain, even if they listen?"

"This is what may happen. These people on Irries do not want a war; they are less warlike than your race, and above all they do not want a war of two against one. Your arrival on Irries will convince them of a very remarkable thing, that since you have delivered yourself into their hands, you do, indeed, wish to stop a war, and that in fact your public pronouncements have been sincere. When they are convinced . . ."

"If they are convinced," I corrected him.

"If they are convinced," he admitted, "you and they together make declarations of friendship. Your father-in-law of Argol has always publicly maintained that he has been seeking every means of reaching an understanding. He will find it difficult to deny, in the face of your announcement, that an agreement has been reached. Your own people will scarcely say that you have avoided war out of cowardice. That is what you must do."

"What is my chance of success?"

"It is about three to one against. The principal danger is that Irries will not believe

your signals as your ship approaches, and blast it the moment it comes into range."

"Thank you," I told him. "I'm not going. After all, why should we not have a war? We've always had, have we not, every ten or twenty years or so?"

"I promised I would make you a great King," James reminded me. "It is more true to say that you must make yourself a great King. I can only show you the way."

"I think I would rather be an ordinary King, alive, than a great king, dead."

"But you will be dead anyway, so very soon. You humans do not live very long."

"But the short life that remains to me promises to be interesting and amusing. Even a war can be amusing for kings."

He stood before me in silence.

"Tell me why I must take this great risk."

"So that you may become a great king."

"If I do as you advise, and succeed, and live to be as great as you promise, shall I be remembered?"

"For a few hundred years, perhaps even for a thousand;

in the end you will be forgotten."

"Then why should I?"

"There are no other reasons."

"Then shall we talk about something else?" I suggested.

But in the end—the reasons why I did are not clear to me even yet—I went to Irries, alone in a small craft.

Long ago though all this happened, I can still remember the moment when I landed on the space field of their capital city; the levelled weapons, the hostile faces, the suspicion, the arguments. But I succeeded. I returned to my own planet in triumph.

The revolt that broke out soon after my departure, when the army learned what my intentions were, was suppressed by the Queen without difficulty. She hanged eighteen leaders.

So, in due course, I became the great king, leader of the three planets of our system.

"Now you must tell me why you have done this for me," I told James.

"I think you have partly guessed," he replied. "But I shall tell you . . .

"For some thousands of years now, since the galaxy has been explored from one end to the other, and all its

habitable worlds occupied, and since it was shown that the galaxy is the final limit and boundary for the races within it, those races have made no real progress in any direction. Each one of them, human or otherwise, has gone through a regular cycle of advancement, civilisation, maturity, degeneration and finally decay back to barbarism again. In some corner of the galaxy or another you will find an example of every stage in this process, and every possible variant of it. The average period of these cycles is about eight hundred years. The low level is usually some form of regional feudal government, and the peak whenever it is reached, is never higher than the level of culture attained by the Sol civilisations five thousand years ago. No moral or intellectual or philosophical development beyond that point has ever been achieved. What is worse, no person or group of persons any longer believes in real, continuous, unending progress, or talks of it, or hopes for it, or strives for it, or tries to imagine in what directions progress might be made."

He paused.

"I am attempting to alter

this state of affairs. I am trying to break down this vicious circle. For example, I found on this planet a civilisation of low order, governed by the weak son of a typical warrior-king father. The civilisation has no moral soundness and is already on a downward trend. I chose a key personality."

"You mean me?"

"Certainly. And influenced him in such a way that, in-

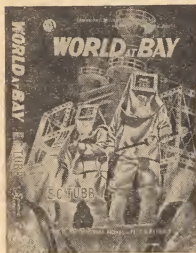
stead of spending a brief and useless life amusing himself with actresses, he becomes a king—a real king—by whose influence the downward trend of the race is altered. It develops upward in a new direction."

"You think it will?"

"I am certain of it. And it becomes more certain after I have explained this to you."

"I never supposed you were explaining just for the

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sake of satisfying my idle curiosity. So, in fact," I commented, "you, a single, solitary, artificially created personality, have set about reshaping the destinies of the races of the galaxy?"

"Exactly," he agreed, without modesty and without bombast.

"I think I see a fault in your usually impeccable reasoning," I told him. "Do you consider that the small re-orientation you have brought about in this part of the galaxy can have any lasting and important effect? After all, you yourself have called us an insignificant race in an unimportant corner of space."

"What you say is true. But I am leaving your service now; I am going elsewhere across space, to apply my lever to another world, to move it also out of its cultural cycle."

"And wherever you go, you seek out some individual who will serve as a fulcrum to your lever?"

"That is my method," he agreed.

"It will take a long time," I commented.

"I have a great deal of time to spare" he pointed out.

"Now," I asked him, "you have answered all questions, and given me every explanation—except the final and ultimate one. Why do you do this? Not out of affection for us, I suppose, nor from a sense of duty. Why do you do it?"

"I want to know where you will go from here when you begin to move again. I want to see what happens when the ball starts rolling again. That's all. You see, I have one characteristic in common with other intelligences—curiosity!"

HARNESSING THE SUN

Many people believe that the enormous amount of energy liberated by the Sun could be trapped and put to work on Earth, and experiments are under way to find a method of doing this. Merely to trap the Sun's energy is a simple matter; but turning it into an economically productive process is quite a different and more difficult thing.

Various estimates have been made of the amount of solar energy that falls on Earth. In a year it is equivalent to the energy in something like 122 trillion tons of coal. Every day each one and a half square mile of Earth's surface receives enough solar energy to give a temperature equal to that of an atomic bomb burst. And the yearly amount for the whole world is several thousand times greater than the energy the whole world actually uses at the moment.

Ever since Archimedes tried to trap the Sun's energy, man has been working on the problem. Way back in the eighteenth century, Lavoisier melted iron by utilising solar energy. The latest device, a parabolic aluminium mirror ten feet in diameter, at Rockhurst College in Kansas City, produced a temperature of 3,000° Centigrade in only ten seconds. But this temperature was limited to an area of only 0.03 square inch!

That is the root of the difficulties. No mirror yet devised has been able to concentrate the Sun's heat over a sufficiently large area at high enough temperature to make the conversion into electricity economical. And even these mirrors have required enormous capital expenditure for construction.

Even so, solar energy *is* being used. A canning factory at

Tashkent is powered by large parabolic mirrors, and in America it is estimated that there will be at least thirteen million solar power installations by 1975—each installation costing between two thousand and three thousand dollars, and the total number supplying a tenth of the nation's power needs. Most of these installations will be used for small-scale processes.

A big step towards the solution of this problem came when solar engineers had the idea of storing the energy trapped from sunlight. Naturally, it is stored as heat. Several methods have been tried. Water warmed by the Sun has been kept in a tank—not very successful. Then it was found that Glauber's Salts will hold eight times as much heat as the same volume of water; so air warmed by the Sun is passed through a large bin of Glauber's Salts and then onwards to heat the house. At night-time, the salt gives off heat itself and so warms the cool air passing through it with energy that it has stored during the day. Before trying the system yourself, it would be well to remember that the house in which this happened cost thirty-three thousand dollars

to build and has only four rooms!

In many of the American sunny states, such as Arizona, California, Texas, domestic water is heated by the Sun in a meshwork of piping on the roof and then stored in an insulated tank. This water is at a temperature of about 150° Fahrenheit.

Yet the very best solar converters use only three per cent. of the available solar energy. Direct, photoelectric converters use even less. The usual type of selenium cell, which generates electricity when light falls upon it, converts only a tenth of one per cent. of the incident sunlight.

Thus it is a frustrating affair for the solar engineer. Here is the Earth, receiving fabulous quantities of free energy—fully enough to keep the whole world supplied in plenty—and apparently nothing can be done to trap it. Even the most enthusiastic solar engineers admit that all methods tried to date have an element of crudity in them, lacking the fine elegance that has sprung up in so many other spheres of the struggle with environment and the mastery of nature. Somehow, the idea of fitting up a gawky mirror and storing

heat in gigantic bins of gravel does not strike one as being in the best traditions of applied science. But no one has come up with any better idea.

For inventors there would hardly be a more potentially lucrative field. The man who devises equipment for the economic use of solar energy will become the richest man the world has ever known, and will be able to spend his gains with easy conscience—knowing that he has given the world something that is really beyond price, a source of free power.

But basic theory holds out little hope of that man ever appearing. It looks as though we shall just have to carry on building bigger and better mirrors, finding better storage materials and more efficient photoelectric converters. Perhaps the utilisation of solar energy will only become a serious factor in national affairs when various groups get together and jointly construct a huge mirror and heating plant, turning the resulting

energy supply to communal use.

But even before that would pay off there would have to be a great deal of work done on insulators, capacitors and metallurgical problems.

Also, for the far future, it must be remembered that the satellite station is designed to run on solar power collected by an enormous mirror. If means could be found of sending energy as a wave form over fairly large distances, it might be possible that a chain of satellite stations designed for the express purpose of gathering and relaying solar energy might go a long way to making this tremendous source of energy available on Earth.

There is no means at present of telling whether this will be done. For the time being we shall just have to let the major part of this energy stream away from us and be lost. And there seems little hope that the Sun will ever rival atomic energy as a main source of power.

TWO MEN IN A SHIP THAT CAN CARRY ONLY ONE.
BOTH WITH A BURNING AMBITION TO BE THE—

FIRST DOWN

by KENNETH BULMER

John Curry had just cut the rockets, leaving the far-off silver wheel of the space station a dwindling pearl against the broad dark flank of the Earth, when he heard the knock on the door. He ignored it, checking the fuel gauges, his thin, intense features pulled down into a puzzled frown.

The knock was repeated and he knuckled his ears.

"I may be heading out to the Moon by myself," he said aloud, severely. "But that's no excuse for getting space cafard already and hearing things."

The knock came again, an impatient tattoo on the inner airlock door.

"According to all the scientific facts"—Curry reached for the door safety switch—"this can never happen. And according to all the scientific fiction, it invariably does."

As he looked down at the airlock hatch in the centre of

the cabin floor the cover rose jerkily and a space helmet and space-suited shoulders came into sight. Curry waited quietly, relaxed and lounging in the control chair, his legs perfectly comfortable, whilst the newcomer swung the hatch back and stood up. After all, there wasn't very much he could do, not at present.

The discarded suit disclosed a small, sharp-faced, nervous man. His narrow face was tensed and white, as though he had been labouring under some intolerable strain, and he ran a finger round the collar of his coveralls as if they were too small for him.

The suit floated to one wall of the tiny cabin and the stranger hastily seized a hand-rail. Curry saw that he wasn't completely at home in free fall.

Curry sighed disappointedly. "I was hoping my stow-

away was a woman. Would have enlivened the trip."

"I suppose you want to know who I am?" began the stranger.

"I don't care who you are." Curry spoke quietly, keeping his anger simmering below the surface of his mind. "Oh, sure, you're Steve Something-or-other. One of these confounded nosy-parkering reporters who've been hanging round the station writing up all about man's conquest of space." Curry's voice rose. "What do you know of mass-ratios and exhaust velocities that we don't spoon feed you? And now you have the damned impertinence to stow away on my ship!"

"The reporters have a job to do—we have to ensure that the world knows where its billions are going——"

"As far as you're concerned, the world's billions will be going down the drain! I nearly had kittens at take-off figuring why I was using extra power to reach speed—it was because you'd decided to stow away and take a trip to the moon. What d'ye think this is—a Sunday school picnic?"

"I know what I am doing."

"I doubt it. You probably don't know that the extra fuel

used on take-off to lug your stinking carcase along will have to be made up somehow. This is the *first* rocket to the moon, Steve, not a regular Saturday night ferry."

Steve twisted round on the wall, holding on with his left hand. He said: "I realise well enough this is the first moon rocket. That's why I'm on it. I'm going to be the first man on the moon."

Curry sat up against the straps of his chair under the shock of that. Steve crabbed awkwardly round the cabin, making sure he had a firm handhold before letting go with the other hand. Curry snorted contemptuously.

"You don't have to hang on as though you're going to fall out of the window. Let your body relax. Float where you want to go." He looked hot-eyed at the reporter, clinging tightly to the rail. "And as for your being the first man on the moon—forget it. That's all been arranged long ago."

"Don't misunderstand me, Curry," Steve said deliberately. "I'm going to be the first man on the moon."

"Oh, don't talk rot——" Curry began, and became very quiet and very still as

he stared at the large and ugly automatic the reporter produced from his coveralls.

Curry knew he had to be the first man on the moon. That was why he'd gone on living when it would have been easier to have died. But could he expect this maniac to understand? Appealing to the man's emotions appeared an impossibly slender chance.

He pulled a small, jagged piece of metal from his cover-all pocket and held it up so that Steve could see it. It was black and stained.

"Do you know what that is, Steve?"

"No."

"It's a piece from the casing of an A-4 rocket. What we called the V-2. I was ten years old when the rescue men gave it to me. Even though some of its meaning has been dulled by time, I still carry it. Especially now, on the first rocket to the moon."

"I don't know what you're talking about," Steve said roughly.

"Imagine a young boy, everything he had, and everybody he had, suddenly smashed and gone, annihilated in the fire of a rocket weapon. How would he feel about

rockets? You, how would you have felt? I know. And that's what everybody seemed to expect of me."

Curry was gripping the piece of metal so that its jagged edges deeply indented his skin. "Everybody expected me to hate because my parents had been killed. They couldn't see it any other way. I saw only that the great possibilities in rocketry had so far not had a chance. I worked and studied. Slaved my guts out. Have you lived for a year on a stale bun for dinner each day, so you could buy more textbooks? Worked half the night in an icy room because you couldn't afford to light the fire? And on top of all that have people call you crazy because you had rockets in your head and a dream in your eye?"

"Sob stuff." Steve's thin lips curled back from yellowed teeth and his face was bleak and bitter. "Wouldn't make a column inch of copy. I know——"

"So okay. But that's a little of the reason why you won't be the first man on the moon."

"You're not the only guy who's worked for this moment,

Curry. I told you I knew what I was doing when I came aboard."

"Just what do you think you'll get out of it?" Curry didn't bother to disguise the distaste he felt for the reporter. "When you get back, what do you expect?"

"I expect the world. I'll be a hero all right. The first man on the moon!" Steve licked his lips feverishly, but the gun remained steady in his fist. "Think of it. Think of the money in it. Think of those headlines! Articles, interviews, T.V. and radio. Oh, I'll be a made man. Yes, Curry, I know what to expect when I get back."

"You're just plain stupid!" Curry snapped. "You'll be tied up in such a web of top-level secrecy that you'll never leave Security areas——"

"Stupid? That's funny." Steve waved the big automatic, his yellow teeth gleaming under the control light. "It looks as though you're the stupid one. Don't you think I can handle all that brass-hat stuff? I wasn't chosen for this assignment in the first place because I was dumb. I'm smart, Curry, smart. Don't forget it."

"I haven't even tried to

think it," Curry retorted. "I'm just telling you that when and if we reach the moon in five days' time I'm the first one down the ladder."

He spun the gun by its trigger guard, then centred it on Curry's chest. "This says different, fella."

Curry leaned back in his control chair and crossed his legs stiffly. If he allowed them to stay in one position for too long they grew numb. But the medics had okayed him, knowing the dream fomenting in his mind.

"Did you ever read the handouts given to the Press back on the station?" he asked casually.

Steve's eyes grew wary. "Sure. Why?" The gun did not waver.

"Just wondered. Do you remember the amount of thrust required to set the ship down on the moon? How long to apply it?"

"No."

A gleam showed momentarily in Curry's eyes and Steve scowled in response.

"If this is your clever idea of telling me that I can't fly this can, you don't scare me the littlest bit." Steve patted the gun with his free hand and only just had time to

grasp the rail before his body began to float away from the wall. "This says you land it. My way."

"Carry on." Curry put his hands behind his head and leaned back. "Shoot."

He shut his eyes.

"Only remember," he added, the words flat and dry in the tiny cabin, "you'll never get back to Earth. Just go on drifting out into space. Or fall into the sun. So go on and shoot—and be damned!"

"That's where you're wrong, Curry." Steve's voice was soft and slapped back in sibilant echoes from the metal walls. "I'm not foolish enough to kill you. All right, I know I can't pilot this ship, that I need you for the figuring. Remember, that's what you went to school for. My schooling was slightly different."

"Three R's?" Curry asked, lazily, feeling the mastery of the situation sliding into his hands.

"If you don't land this ship on the moon the way I say, I'll put a bullet into your kneecap. That would be most unpleasant, wise guy. And if you still played dumb, well, you've always got another knee."

Curry shifted his body

round stiffly, opened his eyes, stared levelly at Steve, clinging, limpet-like, to the rail.

He said, bitingly: "You don't think this first trip to the moon is a sure-fire bet, do you? For all the work and planning that have gone into the project it's still a mighty thin chance. We worked as a team—something you wouldn't understand. All of us back on Earth and on the station, fighting the stupid prejudices of clots like you, fighting the emptiness of space, fighting ourselves when our courage ran low in the cold, small seconds of count-off. We all wanted to be the first man on the moon, all of us who had seen the dream built piece by piece. Why do you think I was chosen?"

Steve jerked the gun as though to ward off what was coming.

"They chose me, wise guy, because I'm a human wreck, because I'm just a brain and a heart and lungs and silver wire."

Curry jerked up the legs of his coveralls and Steve recoiled as the leather and plastic and metal of Curry's legs hung nakedly over the chair.

"Shoot my kneecaps,"

Curry said, viciously. "All you want. You're too damned late. That old V-2 got in first."

Steve's rat face went white and he gulped twice. Then his lips twisted and he pulled himself closer to Curry along the rail. "So okay. So I don't smash your kneecaps. But there's other things I can do. I've always won, ever since I was old enough to know what it was all about. You'd better do as I say, Curry, otherwise I'll get real nasty."

"Haven't you got it through that thick skull of yours yet that you just don't enter into my scheme at all? I'm going to the moon, and I'm going to be the first man there. There's nothing, absolutely nothing at all, that you can do to make me alter that decision. I've grown used to taking pain. All my life I've sweated in agony because of what that rocket did. You and your damn pip-squeaking little gun make me sick."

"Wait a minute——" Steve began, and a line of moisture glinted across his forehead.

"Wait hell. You can kill me. Then you'll drift on to eternity, or drop into the sun, which one I don't know right

this minute. And, anyway, I don't care what happens to you. I don't give a single damn for your stinking hide."

"Listen, Curry——"

"And as for your headlines—there won't be any, because no one will ever know."

"But——"

"Shut up!"

Curry turned his back on the stricken reporter and pulled his pencil out on its spring. Twin spots of white indented the sides of his nostrils. "I've some calculating to do, finding out just what that filthy little body of yours means to me in terms of fuel. Something that you know nothing about."

In the familiar world of mathematics, of fuel versus gravity, of acceleration and required thrust, Curry forgot completely the existence of the stowaway. More fuel had been burnt than was healthy. It would mean a greater expenditure to set down on the moon than had been calculated for. More fuel used taking off with the extra weight of Steve and his spacesuit, which now figured to Curry only as another symbol on his paper.

And gradually the symbol added up—to an unpleasant result. There would not be

enough fuel left for the deceleration into orbit round Earth and approach to the space station. Not even with the extra fuel, originally included to take care of emergencies. Curry read what the figures said and knew that it could not be done. He let the pencil slip from his fingers and it snapped back into its recess.

"Well——?" Steve was still clinging to his rail, looking now like a frightened, pop-eyed Koala bear.

"I ought to toss you out of this can!" Curry growled. "Make a useful precedent, at that."

"But you wouldn't do that!" Steve splattered over the words and saliva blobbed from his chin, drifted as shining globules across the cabin. Then he remembered his gun and brought it up in a hand that, for all its gripping whiteness, shook uncontrollably.

"You'd never be able to, anyhow, not while I've got the gun." There was a strained relief in his voice, a pathetic determination to cling to his belief in the power of a gun.

Curry swore. "... that for your gun. Listen to me. You remember those old stories of men who forced a pilot of an

aeroplane to fly them somewhere, with a gun at the pilot's head?"

Steve swallowed and managed a hoarse chuckle. "Sure I remember. And I'd figured that the guy who was foxed into thinking that he had to do what the pilot said was a goon. A bit of softening up works wonders..." His voice trailed off puzzledly.

"The point is this," Curry said, impatiently. "When the pilot convinced the gunman that he controlled the plane, they could land somewhere safely." His voice grew caustic. "But with us it's a little different. You wouldn't know, with your pea-sized brain. Space is not like Earth. Your weight used up more fuel than was calculated for. We haven't enough left to land on the moon, take off and return to the station."

Curry kept his eyes fixed on the other's face, ignoring the threat of the gun. "Not enough, that is, with the present amount of weight we're carrying."

"You'd never throw me off." Steve gripped more tightly on the rail. "Can't you turn around now? Wouldn't there be enough then?"

"Oh, sure. Plenty." Curry

was sarcastic, a flush of red high on his cheeks belying his level words. "We could turn around now—the amount of fuel for the operation would only be that needed to overcome our present acceleration. Then we'd begin to drop back to Earth. There'd be enough to go into orbit."

"Well, then—that's the way out——"

"Like hell it is! I came on this trip to go to the moon. And I'm going. You won't stop that. Even if it means that on our way back we'll smash into the Earth, or miss it and head for the sun."

Steve wiped his hand unsteadily across his face. The gun almost slid from his sweaty palm and he gripped it again in sudden terror. "Isn't there anything we can do?"

"I've already told you what we can do. You can be tossed out and then there will be enough fuel."

"No! You swine—turn back!"

"Go to hell! I'm the skipper aboard this ship."

"You've no right to do it."

"Why not? You've forced your way in here unasked, messed up the life-work of a team of men dedicated to this one thing. You don't deserve

mercy. You're nothing better than a murderer."

Steve was shaking all over now; sweat filmed his narrow face, shining with a sleazy, sick look. He lifted the gun, then pulled it back to his side. His mouth was working.

"If I kill you I'll drift on and on out to nowhere, or maybe drop into the sun. And if I don't——"

For the first time since Steve had entered the cabin, Curry rose from his seat. His face held no readable emotion; deep lines, graven by years of battling against pain, shadowed his mouth, turned his face into the semblance of a death's head. He sailed easily across the cabin, passing the flinching reporter, to finish up by the airlock hatch.

"You knew me back at the station, Steve." Curry's eyes were hooded, the pupils fixed hypnotically on the cringing reporter. "You saw me wafting fairy-like around the corridors on the rim. I don't suppose you gave a second thought to the fact that I never went down to Hub."

Steve choked in a gurgling spasm and shook his head.

"I'll never go back to Earth, Steve. I use a wheelchair there. I'm crippled,

chained to the ground. Out here, I'm free, unfettered, more than a man."

Curry took his eyes off Steve, disdaining the menace of the automatic, and looked with dilating pupils through a vision port. Stars, stars and more stars. Stretching in shimmering folds until the sea of light was taken up and continued by the uncounted nebulae beyond the edge of the Galaxy. A steady, unwinking fire that drew the very heart and guts from a man. That was space. And space was a tough, pitiless taskmaster.

As a reasoning human being, Curry hated to do what he had to do: but the dreams and aspirations of all men, concentrated and distilled into this final effort of the team, over-rode every other consideration. Everything building up into this one stupendous spearhead of a single man in a fragile metal bubble of air heading bravely out into space—all this dedication could not, dare not, be spoiled and wasted.

In a single fluid movement, like the rolling, twisting turn of an attacking shark, Curry launched himself across the cabin, his metal and plastic

left arm trailing at his side, his good right hand clawing and clutching for the gun.

Gibbering in fear, Steve fired twice. Then Curry's lean, merciless fingers closed over gun and hand, gripped and tore, took the weapon away and, almost casually, slapped it across Steve's temple.

Regaining the control chair, Curry strapped himself back into it, his face grim and compressed and a sour, acid taste in his mouth. His rate of breathing had not changed and he stared almost nonchalantly as Steve drifted untidily across the cabin upside down in relation to Curry. The reporter's mouth was slackly open. His bottom set of teeth floated beside him, the plastic glinting in the fluorescents, gradually drawing farther and farther away from his pale, glistening face.

The guy was a skinny, undernourished little runt, dreaming of his name in headlines. But he must have had a driving ambition, a strong share of courage, to have stowed away on the first journey to the moon. Sure it was for money and publicity. Curry caught some trickling doubt of his capacity

to perform the next, obvious step, and thrust into the forefront of his brain the bitter, anguished years, wherein he had toiled and starved for this moment. Hadn't he the supreme right to be the first man on the moon? His dream had been shared by the team; but he had been the firestone kindling their ardour. Or was it just because he was an expendable cripple?

He grunted sourly and ran his tongue over his lips. The smell of burnt cordite was flat and stale in his nostrils.

The two slugs had made an efficient job of wrecking the radio—now that he had time to call the station the means was denied him. He grunted again and reached for a water dispenser, sucked at the nozzle. He was completely cut off from every other human being in the system, with the only man within thousands of miles unconscious and due to be tossed out into space. Curry ejected the empty water can through the disposal port and wiped his mouth.

Now for it.

First of all he retrieved the floating automatic and stuffed it into his coverall pocket, zippering the flap half shut. Steve moaned. Better get the job over quickly, whilst the

reporter was still unconscious, avoid any more unpleasantness. The spacesuit could go out afterwards, along with the gun. Good riddance to useless weight.

Unsnapping the fastenings, he eased himself from the control chair and sailed across to Steve, collided, and with his own momentum propelled them both down to the airlock hatch. The safety switch was set at open on the control board so that Curry could reach down and operate the lock manually. The hatch came up with its dull whine, shockingly loud in the cabin.

Inserting the reporter's limp body into the lock presented no great difficulty. Curry debated whether to eject the suit now, or wait until later, when another groan from Steve decided him.

He reached out for the manual control.

"What's going on? My head." Steve's words were full of pain. They sounded indistinct and slushy. That must be due to the lack of teeth. "Curry! Wait! Don't throw me out! Let me talk to you——"

"Save your breath." Curry was curt, annoyed that the man had regained consciousness before the job was fin-

ished. "There's nothing you can say—hold it! Stay down there." As Steve tried to lever himself clumsily from the lock, Curry unzipped his pocket and hauled out the gun. He pointed it at the reporter's head.

"Don't shoot!" Steve squinted his eyes upwards agonisedly, his hands clawing at the metal rim. "I know enough that my weight makes no difference to us until we start to land on the moon. Let me live a little longer. Curry! For God's sake!"

"So you can maybe jump me when I'm asleep?"

"I promise——"

"That's a laugh."

Steve's eyes were deep sunk in his head, light glinted from the moisture on his face. His whole body was shaking.

"Curry, I'm begging you—don't do it! Turn back! Oh, God, I couldn't stand to die that way."

"You should have thought of that when you stowed away. I've explained that it doesn't matter to me what your fate is—I'm the man who is landing on the moon. I've given up too much in life to be cheated of that now." Curry's voice trembled. "I'm not throwing away the fruition

of a life's dream. Get back in that lock!"

"Listen to me, Curry." Steve pleaded desperately, the glazed blank look in his eyes and the slackly drooling mouth sickening Curry. "You're not the only one who dreamed a dream. You're not the only one who's had it tough. I was born in the gutter, fought with my two hands for a better life, thought I could write a bit, took the kicks and abuse of a dog's life. Oh, yes, Curry, I know all about the seamy side. It wasn't only because of the money that I came aboard here—I've lain awake at nights, in stinking hovels, and dreamt of the new worlds that are coming. I've watched the moon swimming white and cold and so damned uncaring up there. And I've told myself that one day everybody on Earth would have a better chance than I had. It's all crazy and mixed up . . ."

"You too?" Curry said softly, half surprised that he was listening. "I wonder how many other poor, grubbing mortals have ached for the clean reaches of a new world?"

"I waited for a chance," Steve gabbled on, breathing shallowly and unevenly. "I waited and waited—whilst you

were studying for this thing on your bun a day. I had my dreams, the dreams of all mankind. At that, you're only the physical agency of that dream."

"I suppose you've as much right to your dreams as any other man," Curry agreed reluctantly. "But the way you chose to realise them is so stupidly typical. Get where you want to go on the backs of others. Plead all you like, but there is no other way out. I must consider the team and——"

"But you can't throw me out into space. You can't do that! I've struggled for this moment in history too. I've schemed and planned, hating life, hating myself, wishing I could share that vision of conquering the stars. Maybe I did wrong, stowing away, but something stronger than myself drove me on——"

"It's no use, Steve. Mankind desperately needs the planets. Just think of the cesspool that is the Earth we know." Curry found a derisory wonder that he was arguing with the fellow at all. Why not get it over with right away? After all, he had the gun, hadn't he? He moved his plastic and leather legs into a more comfortable posi-

tion, moving closer to the rim of the airlock.

"Don't I know it's a cesspool. I've always got what I wanted—after I found out that you don't have to be the kicked all your life. I don't think I'd remain sane under the thought of that alone if you threw me out. Can't we turn back? Try again in a few days?"

"We can't turn back. That's final. As it is we're running on the fine edge of ruin, what with the atom stockpiles building up down there. Mankind just can't wait for the planets. Your few days would make all the difference. You'll just have to go overboard insane, that's all."

"What you mean is that there'll be a lot more kids like you and I were, crippled mentally and physically, if Earth doesn't blow off steam reaching the planets? That's it, isn't it?"

"You've said it, Steve. Now get down that lock."

"Don't make me do it, Curry! Don't force me to it! For God's sake!"

And even as he spoke Steve ballooned up from the hatch, floundered into Curry. The pair twisted in a writhing tension, like partners in some macabre underwater *pas-de-*

"TLA CORGW VRNEQ"

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SPACE TIMES

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deux, and then Steve had the gun and was trying to hold its shivering metal steady on Curry's helplessly drifting form. His breath came like the erratic fluttering of a moth against a window pane.

"I've got the gun! You'll have to turn back now!"

Curry sighed.

"I thought we'd decided all that before. You just don't count. Beside the desperate need of mankind for the stars, beside the work and sacrifice of the team—well, Steve, you're just a laugh."

Steve didn't say anything. He just looked at the gun in his hand with a puzzled, hurt expression on his lean face. The cabin wall came up under Curry and he landed with a gentle bounce. He spread the fingers of his right hand beneath him against the cool metal. He spoke conversationally.

"There was a guy shot up in an experimental rocket a few years before the station was begun. He was a sort of pioneer, sent to find out what things might be like up there. The rocket crashed. There was an escape apparatus. But this stupid, heroic guy stuck to the rocket all the way, sending readings from his instruments so we down on

Earth wouldn't do the same damn silly things all over again."

Curry braced his outspread fingers against the metal wall, ready for the push that might well launch his body to a deadly meeting with a bullet. He didn't care. One way or another, he wanted to finish this thing. He smiled slightly.

"I'm coming for you, Steve. And this time, you're going out."

Even as he pushed off, heading straight for Steve, the reporter's narrow face crumpled and broke up, and harsh sobs burst from him. He cried.

Then Curry had his arm thrust before him, ready to take the gun away, and all the stars in the Galaxy crowded into his head. The sluggish knowledge came that Steve had lashed out in desperation. He felt no pain, then all sense left him and there was only a swooping rush down a long soft billow of foam.

When he came round Curry was more than surprised to realise that he had regained consciousness. He shook his head. He was lying awkwardly across the control chair and automatically he twisted round

and pulled himself into it. This didn't make the slightest bit of difference to what he was going to do.

He looked around the tiny cabin, his eyes jumping and a pain shooting through the back of his head. Then he stiffened, awareness growing lumpily.

He was the only person in the cabin.

The inner hatch of the airlock was shut. When Steve had slugged him it had been wide open. He glanced quickly at his controls. The safeties were still off, so that the lock could be operated manually. And the red light showing that the outer door was open shone steadily and evilly at him.

"Well I'll be——" Curry said aloud. "Wanted to do it himself." And then, more softly. "Queer guy."

A crackling rustle at his breast startled him. He looked down quickly and saw the slip of white paper thrust into his coverall zip. He took it out carefully, knowing what it was, wondering just what journalistic heroics Steve might have, at the last, dreamt up.

The note was very simple. "I'll leave my headlines to you."

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

This manuscript was found on film in the middle of an Australian desert. Is it true? Or were both of them mad?

★

THE STAR VIRUS

by F. LINDSLEY

I am writing this with desperate haste, trying to make my writing much larger than usual.

It is vitally important that this information is taken to some influential scientist or medical organisation with absolutely no delay. Don't take it to the police; their regard for official procedure could cause catastrophic delay. Try the heads of medical departments at the universities. If Peter is right this is the most shattering thing since the atom bomb was developed—and much more dangerous.

An ordinary aircraft engineer like myself never meets anyone of real importance, and I'm certain that Peter is unknown to anyone of significance except his bank and some firms in Sydney that supply scientific equipment.

He may be a member of some scientific society; please check up on this. At the moment it's just Peter and myself, a couple of nonentities, against the world. You must get a line on something to support all this, otherwise it might be regarded as a hoax or a phantasy. I know it's hot out here, and I know I've been on the fringe of the desert for a long time. But this is the frightening truth——

——I'll move my car away from the house. I shall have to run all the way back but, while I'm gone, I'll try to think out how to get this down with some sort of logic and reason. It will be a calamity if whoever sees this thinks some insane person is playing a practical joke——

——Twenty vital minutes

have been lost since I stopped writing. It is now 1310 hours; I drove up here at 1230, then writing, then twenty minutes for moving the car. Peter must have switched the coffee pot on about 0900 this morning. That gives me until 1545 or, at the latest, 1600 hours. That means I haven't got more than three hours. And there's no flying today, so they won't expect me back at the airstrip until after dark; but they're sure to come looking for me if I'm not back by midnight because we're due off at dawn tomorrow. Then they'll find the car. I simply dare not drive it back to the airstrip.

I've parked the car across the track about 500 yards away from the house. The cushions and all the upholstery that could be ripped out have been burnt in a sandhole and well covered over. The front axle of the car is jacked up and the rear tyres are flat so that the sunlight is going straight onto the radiator. I think sunlight is polarised until well after mid-day; I don't know if it will do any good, but I've got to the stage where I must try anything that looks helpful. Please don't think I'm mad.

The heat outside is fearful and writing here in the house, in front of this damned machine, makes it twice as bad, but I dare not stop writing for a second. I've got to get the story down with just enough details and background to convince you that this is the terrible truth. And to think I've never written anything in my life except reports on damaged aircraft.

I first got to know Peter about six months ago. Our outfit specialises in mineral survey work, aerial photography and follow up checks with a magnetometer trailing underneath the aircraft. We came up here with an old Anson and a contract to cover an awful lot of the desert that lies to the west of this area. I never did like the desert, and I like it a great deal less now it looks as if I'm going to die in it, but you know how the aviation business lands you in some queer situations.

Out here near-neighbours are about a hundred miles apart and I'd noticed this place, about twenty miles west of our airstrip, when we were coming back one evening just about sunset. There was the sort of reflection that

one sometimes sees from glass roofs or water, both of which are rather scarce here. Gordon was piloting and he reckoned it was just a quartz outcrop catching the sunlight.

Now aircraft engineering is a job that teaches you to regard with distrust any technical triviality that cannot be explained with hard technical facts. There's no quartz around here; at least there's none anywhere near the surface. The map didn't even show a contour line, so I set the camera going and took a group of overlapping verticals all the way back to the field. I knew the compass heading, and as soon as the pictures were printed I set off on a bit of private exploration.

That is how I came to meet Peter. The cause of the reflections very nearly describes the man. He had covered the roof of his house with some transparent plastic structures about ten feet long and three feet from edge to edge. They were filled with water and acted as lenses focusing on some small water pipes, producing steam for a little turbine which ran the generator. A photo-electric relay followed the sun around and tilted the lens assemblies.

Peter had electricity laid on, with reserve capacity stored in enough batteries almost to drive a submarine.

A technical introduction like this put us on a good footing of mutual friendship from the beginning. An additional factor was our equal interest in music; I shouldn't be surprised if Peter's collection of records is the largest one to be found anywhere outside the cities. On evenings when I wasn't tied up with routine maintenance or, like today, when it was too bumpy to do precise survey flying, I would drive over here to give Peter a hand with some mechanical job, or maybe we would just chat or listen to music.

I don't know Peter's nationality. Certainly European, but he could have been anything from Dutch to Bulgarian; he never told me and I'm no judge of these things. His English was very slightly accented and sometimes the order of his words was twisted in a typically foreign manner. Probably no one here in Australia knows anything about his background. All I ever found out was that his fiancée was a medical student who committed suicide, but

that may have been twenty or more years ago. Peter must have arrived in this country before the war. When he recently sent an oscillator back to Melbourne for repair I had to check up on the original invoice and that was dated 1939.

His work was mostly in the medical field. At least that's what it turned out to be. This house is a weird combination of physics laboratory, observatory, zoo and botanical research station. Yet you couldn't meet anyone less like a fanatic or scientific crackpot. Peter would talk about his work in the same heavy, unaffected way that he would use when he was discussing a Schubert quartet or considering a rebore for his ancient Chevrolet. I am quite convinced that some investigation into Peter's history will prove that he was once a prominent personality somewhere. Nearly all important discoveries, nowadays, are made by groups of research workers; it takes a towering genius individually to accomplish what Peter has done.

Peter's particular line was virus research. Modern science, he said, had fairly completely defined, named

and described all the world's plants, animals, insects, fishes, minerals, natural phenomena and diseases. But the viruses formed a comparatively unknown group and could eventually prove to be the most important thing in life. A virus is incredibly small; many of them cannot be seen, even with electron microscopes. They are chemicals which can be crystallised, just like common salt. Apparently they can stay inert for lengthy periods but, when active, they can multiply like a living organism.

Our knowledge of viruses is, so far, pitifully inadequate. Peter told me that the first isolation of a virus by crystallisation was made as recently as 1935. So the medical profession has had a mere handful of years to study viruses—a small period when we reflect that Egyptian priests were successfully carrying out brain surgery three thousand years ago.

Peter was quite sure that however little we knew about the viruses, they knew a great deal more about mankind.

Peter's work produced an unusual but satisfying by-product, a very good smoking tobacco. He grew tobacco

because one of the plant viruses, yellow tobacco mosaic, has the largest known virus, which makes it particularly suitable for general research and investigation. There are scores of tobacco plants in the house now, in every stage of growth and decay. They have been treated with ultra-violet light, high frequency vibrations, cosmic rays, chemical injections and other processes which I could not pretend to understand.

Sometimes, in the evening, we would sit on the veranda, listening to the records, smoking Peter's special brand of tobacco and drinking his inimitable coffee. Under these circumstances even the making of the coffee seemed to have a faint tinge of ritual about it. As the music died away we would be conscious of the enveloping Australian night about us. Vaster and more unreal than night ever seems to be away from the interior. A vague and luminous land stretched out to an indefinable horizon, a limitless tapestry of stars spreading overhead and beyond.

"See this tobacco," Peter once said, "and those stars out there? There is a powerful and horrible connection.

Let me tell you why these inconsiderable or unconsidered things are far more important than anyone can be persuaded to believe. Have you ever laughed at astrology? You think it is perhaps just something published in magazines which are primarily devoted to the entertainment and lighter interests of women. But how many people catch just a glimpse of the article without reading the little piece about their *own* birthday? And, when they've read it, do they smilingly turn to the next page? Perhaps you *do* laugh, and yet a tiny part of your mind insists that there might be something in it after all; nothing of any significance of course. Now let your mind try to reason out just *what* is in it and you will find that it leads to some disturbing thoughts.

"Do you realise that only in this last year we have discovered that special configurations of the planets have a far greater effect on radio transmission than sunspot activity? Imagine a child suffering from poliomyelitis almost anywhere in the outback of Australia. Bad radio reception might delay medical advice or treatment until it

was too late. Because Venus, Saturn, Mars, Jupiter and Mercury are in certain positions relative to the earth, a child might die or be distorted in body for the rest of its life. And let me emphasise that poliomyelitis is one of the most baffling of the virus diseases.

"What do we know of the polio virus which has killed or maimed people for thousands of years, which, every year, strikes at hundreds of people in Australia? We know almost nothing about it. What do we know of any virus? Not very much more. Some viruses can be separated and crystallised. When a virus solution is evaporated the crystal may be in the form of twelve rods lying side by side and the virus is harmless. Then we put the crystal in solution again and the twelve rods will join end to end; the virus is then extremely dangerous. Of all this we know little except that the joining of the rods is influenced by some form of alternating current.

"Now we take our long rod and subject it to sound vibrations of extremely high frequency. First it breaks in half, then each half into two

quarters and finally each quarter into two eighth sections. Why not twelve sections? Because of natural acoustic laws you say. So we try harmonic sound vibrations, as if the rod were a violin string, but the crystal still separates into eight pieces instead of twelve. Then we dissolve the eight pieces in solution and once again they join end to end to form a long rod, but now we find that the virus is not nearly as virulent as it was before.

"Why? Look up any information on viruses and it will tell you that these phenomena are attributed to the 'influence of outside sources.' What outside forces? Magnetism? That is not an alternating current. Sunlight possibly? Yet I have taken a microscopic fungus spore, allowed it to grow inside a lead box and have later isolated a virus from the fungus.

"I tell you it is significant. The tobacco plant suffers from yellow mosaic virus. The weight of that virus is, by comparison, eighty-two thousand times heavier than lead. It is, in fact, the heaviest molecule known. All viruses are enormously heavy—and all exhibit properties and

activities due to 'the influence of outside sources.'

"Out there, far away in the heavens, there are so-called heavy stars. By using spectroscopes astronomers have found out *how* they come to be so heavy, but we don't know *why*. From some unknown and remote part of space come the cosmic rays, powerful enough to mark a photographic plate even when it is exposed in darkness deep underground. We do not know where they come from; we can only conjecture on their purpose and what they do. All that a scientist can confirm, with any degree of certainty, is that they do exist.

"I have worked on virus research for many years. I am not a doctor of medicine; I was a physicist before I started my serious research and, I tell you, there are too many things happening in the world today which cannot be explained by scientific formulæ, equations or practical experiment. And far and away the most important is the secret of the virus. A life-force hidden in a transparent chemical crystal and yet invisible. The riddle of the universe, with no clue or code leading to the answer."

Peter had reached the unescapable conclusion that the deadly properties of viruses were due to malignant influences from outside the world we live in! Can present day science otherwise explain the ability of inanimate chemicals to live and multiply? An infinitesimally small virus crystal, proved beyond doubt to be nothing but a combination of carbon, hydrogen, nitrogen and oxygen, even when diluted in a hundred million times its weight of water, will attack a living cell and multiply at a fantastic speed. Cattle plague, foot and mouth disease, polio, hundreds of plant diseases and some of the apparently incurable growths in human beings—all these are virus infections.

Since the beginning of time how much have we lost to the virus attack? What incalculable quantities of food-stuffs, livestock, how many men of genius or self-sacrificing doctors, how many priests and nurses have been doomed, how much mourning for dead friends, loved ones and blameless children? By Peter's cautious estimates mankind has lost a thousand times more to the virus disease than has been destroyed by all the wars in history.

But the last fifty thousand years are a mere overture to the catastrophe which threatens mankind unless we do something now! We have in our midst teeming billions of chemicals which can penetrate and destroy living tissue just as surely as a hawk pouncing on its prey or a snake striking remorselessly at its victim. These chemicals are controlled by macabre radiations which we are only just beginning to understand. At this stage of man's scientific progress, we are prepared to unleash radiation energy in overwhelming quantities. A piece of uranium, which might slowly discharge its energy over millions of years, can now be exploded in less than a millionth of a second. We do not understand a fraction of the forces we are letting loose. Hideous and sickening after effects will appear in one, five, twenty or more years afterwards. Forgotten maladies reappear; there may be a frightening increase in some diseases; obscure ailments can become epidemics. We open the modern Pandora's box with an atomic bomb. We die and the virus lives on.

I do not think another living soul has the slightest know-

ledge of Peter's research and his theories. Peter would not publish a word about his work until the final results could be checked, counterchecked, controlled and forecast with unfailing accuracy.

It is extremely probable that the death of Peter's fiancée was the starting point of his work and, in the beginning, he had not entertained any conception of the virus diseases. I do know that his earliest investigations were concerned with the instability of brain cells, the sort of mental storm that causes staid and successful business men suddenly to go wandering around the countryside, the inexplicable motives of sober and respectable husbands who butcher their wives and families, the unsuspected rogue elephant cells lurking in the cranium of *homo sapiens*.

Peter started off by studying the nervous energy of brain cells and the reaction of particular groups to certain applied electrical forces. Some of his earliest experiments dealt with degeneration of the direction finding mechanism in homing pigeons. By exposing the birds to varying artificial magnetic fields he had, with inconsistent success, been

able to deflect them from their normal courses by a proportional angle. A random reference in a scientific paper, drawing attention to the mass and electrical peculiarities of virus crystals, had influenced all Peter's subsequent work. He elaborated the pigeon experiments by using one of the mildly paralysing viruses. Using injection and electrical exposure, screening one side of the birds with opposing currents, he had made them fly in circles so that they homed back to the laboratory, where he carried out further bloodstream and intramuscular tests.

After some months of patient work he discovered that uninfected and unexposed birds began flying in circles and, later, completely erratically. The loss of a number of birds left some serious gaps in his experiments and blank spaces on his charts which pained his methodical mind. So he began injecting the pigeons with a delayed action drug, tracked them with a telescope for the two or three miles that they flew, then brought them back for examination and correlation with the courses they had flown. Even under an electron micro-

scope there were no traces of disease in the muscle tissue or nervous system of the wings—but some of the brain cells had been attacked. Peter, unlike the pigeons, was on the right track.

He painstakingly extracted and analysed the virus crystals. The chemical constituents were the same. The crystal was a different shape. It was a new and unknown type of virus with only slight resemblance to the one he was using in his experiments. The virus was mutating, following precedents completely unknown among chemicals but well established among living organisms.

Peter faced up to the possibility that he was confronted with an unknown evil. His work went on with a new objective in view. The viruses were the enemies of man, the guerillas waiting in ambush to pick off stragglers, the commandos making a lightning attack on some village or town, the organised battalions of the most powerful army in the world, immense, invisible, unsuspected and apparently invulnerable.

"They are waiting," said Peter. "They *know*. They have brains but no real

creative ability. They are like a well-trained army, and for thousands of years they have merely been carrying out training manoeuvres to maintain their efficiency. They want the equipment which we have only succeeded in developing during the last fifty years; they want the broader tobacco leaves that modern fertilisers have produced; they want the fatter cattle resulting from hormone culture; they want the bodies of healthy and athletic children; they want the minds of world famous benefactors.

"One day the real attack will come, and it will occur in a way that no one can imagine. We applaud the advances of science. We say, 'Look at the wonderful things our modern magicians have produced!' We press a switch and we have light, music, a voice from across the world, an engine producing stupendous power—or a man-made eruption. It is all taken for granted; yet, while the world makes merry, the Trojan horse of the virus will attack from within.

"There is a virus which causes warts on the ears of rabbits, another which wilts tomato plants, others which

produce fever in horses, small-pox in poultry and agonising death in human beings. But the leader of the virus army will attack the brain. It is the cleverest of them all, the master mind, and I call it the star virus.

"I *know*. I can prove it mathematically. It is a reasoning, living thing with a brain as cold, calculating and methodical as the crystals of which it is formed. It is shaped like a star."

Spilling some coffee, and with slow, steady strokes of his finger, Peter drew the pattern on the table.

"You see! The triangle, the fundamental basis of all engineering structures, the phalanx of the old Greek armies, the enduring pyramids of ancient Egypt and even more ancient Mexico, the underlying motif of man's drawings of stars since primitive times. The three outermost spearheads of attack, supported on each side by a questing flank to reconnoitre or act as reserves. The twelve elements of the virus; the twelve signs of the Zodiac. You think there is no connection? The very name 'Zodiac' comes from the Greek word 'zoön,' meaning animal

or living thing. Let me remind you, in all times and all lands, the latent terrors in the minds of people have been based on scorpions, spiders, Cancer the crab, the angry god of the sea with his three-pronged trident, the hideous brews suspended on the witch's tripod. These fears, actual or imaginary, have been effective and all have existed in the *minds* of men; *and they are all embraced by geometrical mutations of the star virus!*

"Furthermore, all these fears have been allayed or propitiated by opposing geometrical forms, the circular wreaths cast on the waters of the sea, the paired leaves of mistletoe used by the Druids of ancient Britian, the myrtle garlands hung in Rumanian houses on Walpurgis Eve, the so-called lucky horseshoe, the vertical totem poles of American Indians, the joss stick of the Chinese, the peculiar arch of Japanese shrines, the architectural arabesques and beads of Islam, the two curved horns of the medicine man in some savage tribes, the cross of Christianity and here, in Australia, the sacred boards and bull-roarers of the aborigines.

"The star virus is indisput-

ably the superbrain, the cleverest chess player in the universe! It has prepared the way by making man subconsciously aware of its existence, yet without knowing a thing about it. The psychological war of nerves is carried out with a deftness and subtlety hitherto unheard of. The power of the star virus comes from beyond the earth; it cannot be detected or measured, but it is a tremendous force. In outer space there are stars described as 'red dwarfs' and we are totally unaware of the effect they may exert on us. These stars lack size but their stellar mind is of a titanic vastness and potency. Do not forget that the power of a mind, given the slightest of favourable chances, will triumph over sheer bulk and physical power, just as man himself succeeded where the dinosaur failed.

"The attack of the star virus will, almost certainly, fail to be noticed. The disease will attract not the slightest attention until it is well established, and then, even if detected, the virus will have made stealthy countermoves to prevent search for an antidote. The major offensive may be delayed for some

time, although I think recent scientific developments will precipitate such an attack.

"But the preliminary skirmishes have already begun; the signs are unmistakable. There is an increasing madness in the minds of men; a growing incidence of faulty decisions in the highest places is causing hunger, hardship or disaster to greater numbers of people than ever before. Countries with little creative ability and negligible technical resources have illusions of grandeur. Enjoying the manufactured products of science and industry, these countries truly believe that they too can, unaided, produce the same devices. They will eventually suffer disillusion, collapse, bankruptcy and internal dissension. In every land science points the way to a long term policy of foresight, to industrial, agricultural and social benefits which may take years to fully mature. And, without exception, in every country there is a mad opportunist scramble to implement a short period programme of makeshift expediency; all industries are short of materials; future crops are jeopardised by a planting policy based on the market prices of today; every-

where there is a housing shortage and a population problem.

"The percentage of suicides for obscure or trivial reasons continues to increase. There is an enormous drift towards complacency, a feeling that enduring craftsmanship can be replaced by temporary adequacy. The effect of the star virus will be narcotic; the attractive opium dream of today will inevitably fade into the intellectual hangover of tomorrow. With disenchantment will come apathy, nausea, blame, avoidance of responsibility, accusation, intolerance, brutality, war, chaos.

"That is the technique of the star virus; it enters a brain cell, stimulates it for a brief while, multiplies, absorbs all the electro-chemical energy, and then destroys the cell or leaves it devitalised and mutilated.

"What can men do about this overpowering evil? Who has ever listened to the voice of lone prophets crying in the wilderness? How many people have been persecuted, tortured and put to death for voicing beliefs which succeeding generations hailed as fundamental truths? The bitterest

thing in life is to be right and unheeded. See mankind in alignment with the perspective of history. In tens of thousands of years we have made real progress only in the last fractional percentage of that period. Let it be emphasised that even that progress has come from an infinitesimal group of people, mostly nameless draughtsmen, designers, chemists, metallurgists and engineers who have given us everything we now take for granted. Yet the world will not listen to the little obscure men who cannot speak with the voice of power or authority. The peoples of the world today are like children playing on a newly frozen pond. If a timid stranger draws attention to the danger he will be ignored and, should he have to attempt a rescue, he will probably die from the immersion. If a mother calls, some of the children may reluctantly come away, grumbling and eager to return. The rest will play on until darkness or disaster intervenes.

"There are more psychiatrists in the world today than there were soothsayers in any earlier age. Why? What has mankind suffered from better hygiene, improved food

processing, greater intermingling of nationalities, the use of anæsthetics, up-to-date surgery and the latest advances in the treatment of diseases? Millions of people work less, earn more. And yet every alienist has a waiting list of clients; the brain specialists are busier than ever before and the mental asylums are crammed.

"The answer is that the star virus is subtly, silently and relentlessly boring into our minds. Its activated chemicals are going to be the new life, the new master power, the new soul of man. History can repeat itself. Man, who succeeded the dinosaur, who domesticated and tamed the horse, sheep and cow, can be supplanted by a higher mind which will capture and enslave the whole of humanity. Man can become a mere tool to a form of life that we cannot yet comprehend, the relationship of the spanner to the engineer, the slide rule to the mathematician, as functionless as the complex radio valve until it is activated by an electric current."

Those are Peter's views on the theory, power and danger of the star virus. And he is

just overwhelmingly right! He cannot possibly be wrong, and here lies the deadliest peril of all. He has spent years trying to track down, isolate and study the star virus, to experiment with possible deterrents, antidotes and counter measures. But the diabolical cleverness of the star virus is unbelievable. It watches, it knows, it changes characteristics by mutating from one possible form to a different one, using other viruses as camouflage or controlling them like pawns in a game of chess. It isn't even like looking for a needle in a haystack—it's a matter of turning over haystacks at random and occasionally finding some easily explained object, a nail, a piece of barbed wire or the broken tang of a hayfork.

I have never heard Peter speak in tones of exultation or dejection as his research appeared to progress or came to the end of another frustrating blind alley after weeks of labour. Peter went steadily on, every step, the minutest detail of each experiment, all results, whether promising or abortive, carefully tabulated and filed. The star virus countered every move. Peter

tried to outwit it in a number of ways. He would concentrate on elaborate experiments using nearly all his apparatus, pretending to overlook a small project on the spinal cord of a kangaroo. He would run up to fifty different activities simultaneously, paying the greatest attention to efforts which he inwardly considered of little value. A few weeks ago he went so far as to repeat experiments which had proved sterile months or even years before—with results that were different although equally fruitless. The star virus could not be bluffed by tricks of this sort.

Since then Peter has worked on the idea of a shield to filter out emanations from the red dwarf stars, but very little progress has been made. He could not assess the wavelength of the rays, and had suggested that they might operate on a frequency modulation basis. To try to jam the rays he has built a mixed ray projector, but it uses up a colossal amount of power and can be used only for comparatively short periods. Whenever the astronomical tables indicated high intensities of radiation from the red dwarf stars we would

decontaminate the laboratory, sweeping the projector around like a spotlight.

I've had this damned mixed ray projector intermittently switched on and off ever since I started writing. When it's on the heat is unbearable, and when it is off I am terrified that something will happen to stop me writing. The voltage is beginning to drop too, and I must have some power in reserve. There's just half an hour left to do what is probably the only worthwhile thing I have done in my life.

When I arrived here at half-past twelve the coffee pot had boiled half away and I think Peter must have switched it on about nine o'clock. So he could not possibly have been dead for more than three and a half hours, although the prevailing heat makes it very hard to judge.

The brownish pink growth, like a dried and powdery sealing wax, has spread from the edge of his scalp almost down to his left cheekbone, about four inches in two and three quarter hours. I can see no sign of it on my own face yet, but that's probably because it doesn't appear until after death.

The worst thing of all is

the terrible condition of Peter's notes. When I first saw the stain under his left hand I cautiously pulled his hand out of the way by turning the most powerful of the portable magnets onto his wrist watch. He had drawn a very shaky diagram of the star virus on the top page of the file. I've just looked at it again, and now the stain has spread outwards another inch—but the centre of the triangle is eaten away, and this ghastly thing is steadily devouring its way down through the papers underneath! If only I had noticed this earlier I might have been able to do something—it's too late now.

I've written on all these sheets in the biggest handwriting I can do, taking into account the speed at which I've had to do it. I know I have enough film left in the camera. I'll take all these pages outside and photograph them one at a time, then wind the film back to give some protection to the exposed portions. I'll put a note around the camera and burn a message on it with an electric needle, telling Jack about the vital importance of developing the film for

best contrast and definition. There's a fluorescent tube hooked up to a wander-lead; I'll carefully carry the camera and the note indoors, slung on the tube. Five minutes' exposure to the ultra-violet, two minutes in the supersonic resonator and finishing off with five minutes of the mixed ray projector should give adequate sterilisation on the camera. Peter said that the mixed rays didn't fog ordinary film to any appreciable extent. Anyway all this is the best I can do. I'll carry the camera down to the car, still slung on the tube, and I'll pull the lead out of its socket when I reach the end of the length. The camera and its note, hung around the radiator cap of the car, is bound to attract attention and I'm certain that the polarised light will have given some sort of protection.

If there's enough power left I'll turn the mixed ray projector on all the movable equipment and then pull the stuff outside on a rope, as far into the sunlight as I can manage. Then I'll use the high frequency rig to destroy everything that I can identify as a virus culture, along with these papers I'm writing on.

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I wish I knew how or when this virus will strike, particularly as a description of the effects would be of paramount importance, apart from taking my mind off the absolute terror of the thing. The sun is too far west now, so signalling with a mirror looks like a useless proposition. If I can alter one of the oscillators to an aviation frequency I'll try to keep sending out information in Morse. Some flying control somewhere might get it down permanently on their wire recorders.

If everything looks completely hopeless I'll set fire to the house before darkness sets in—or when I feel that it is necessary. The car is blocking the road, so that

will delay anyone trying to rush up to the house, and they're sure to see the camera and the note. I'll make sure the place is gutted in a few minutes.

The final irony—I've just remembered my horoscope for to-day. It said I might go on a new and strange journey!

EDITOR'S NOTE: *When trying to assess the truth of the claims in this remarkable manuscript, readers should bear in mind the well-known, mathematically correct theory of Arrhenius—that tiny particles of living matter may be pushed onto Earth from space by the force of sunlight pressure.*

SOME OTHER TIME

is next month's feature novel by Kenneth Bulmer. Other stories include DEATH DEFERRED by E. C. Tubb, DIMENSIONAL DESTINY by Graham Winslow and THIRD HAND by George Paul Mann. Supporting non-fiction features: *Logic is Fun*, *Medical Progress by 2,000 A.D.*, *All About Comets*.

AUTHENTIC—A MONTHLY MUST



Fiction

Once again Museum Press and John Carnell have collaborated to give us a fine anthology. *GATEWAY TO TOMORROW* (Museum Press, 63 Old Brompton Road, London, S.W.7) costs 9s. 6d. and is very nearly worth it. At 8s. 6d. there would have been no doubt about it. Carnell has written an introduction which is sound and thoughtful, and he has selected a story each from ten authors—all British. In addition to well-known names like John Wyndham and Arthur C. Clarke, this anthology also contains a couple of newer authors, such as E. C. Tubb and Peter Hawkins. And it can be whispered that some of the stories by the newish authors are rather better than those by some of the old! But *all* the stories are good, having been reprinted from *Galaxy*, *As-tounding* and *New Worlds*. Highly recommended.

Grayson and Grayson bob up once again with a new title in their prolific output of science fiction books. This time it is *STRANGE TRAVELS IN SCIENCE FICTION* (Grayson and Grayson, 16 Maddox Street, London, W.1), which costs 9s. 6d. It contains thirteen stories by some very good authors. We think that this is the best Grayson anthology to date, and we have no hesitation in recommending it very highly. The reasoning behind the title is rather obscure, for many of the stories have nothing to do with travel in the ordinary sense of the word; maybe something esoteric is intended. But they are all in a vein that could be called "thrilling," if that word did not immediately conjure up visions of bodies with knives in their backs. One very interesting point about it is that it contains a story by Jack London; few people out-

side the field of science fiction would have believed that this intensely sane lunatic and honoured writer had ever had anything to do with science fiction. Now they'll know! This book should definitely be on your shelves—unless you already have Groff Conklin's *OMNIBUS OF SCIENCE FICTION*, of which this anthology is a part.

Two more titles come from the Science Fiction shelf of Weidenfeld and Nicholson (7 Cork Street, London, W.1). One is *THE WEAPON MAKERS*, by A. E. van Vogt, costing 9s. 6d. Once again, it ought to have been 8s. 6d.—Hamiltons can do an equivalent length anthology for that price. Still, this is a good story. It is a kind of a sequel to *THE WEAPON SHOPS OF ISHER*. There's very little *deep* material in this story of a gallant immortal's swashbuckling double-dealing between half a dozen opposed factions. But it moves fast, it has colourful backdrops and it is alive with gadgets—some of them rather questionably credible. Of course, there are BEMs too! You could not rightly call it space opera, nor could you say it is the opposite of that. VV has a happy way of wedding several science fiction

forms into one story—and the marriage is fairly successful. We would say that this is certainly not VV at his best, though it comes very near to being that. It's a very readable piece of romantic space-busting. But at 9s. 6d....

The other W&N title is *CITY*, by Clifford Simak. This too is 9s. 6d., but we rather feel that the price is justified. You've probably never read anything quite like *CITY*—which statement should make you all agog; so many books these days are painfully similar. It is a series of stories that range in time from not too long after now to millions of years into the future; and in the book they are treated as all being incredibly old, legends in fact. In the book the stories are linked by scholarly comments by a literary historian, who summarizes the reasons for and against the legends ever having held any truth. The interesting point about this is that the historian is—a dog.

Yes, man's best friend has taken the place of his master. Not, let us hasten to add, by force; dogs, as everyone knows, are pretty decent tykes. Really what happens is that man more or less gets fed up with things and disappears. A

scientist happens to have been experimenting on dogs, and over the years—well, that's the way it is. There are robots in the story too. Nice robots. Mutants as well. Not so nice mutants. The whole thing is done with the utmost credibility. Anyone who doesn't read this book is no science fiction fan!

From the States, the firm of Doubleday is continually adding to the world's stock of really superb science fiction stories, put out in a form that must make British publishers cry at night. All Doubleday books are extremely well-produced and the two we are noticing here are no exception. They both cost \$2.95; one is by a British author, the other by an American.

The British story is by J. T. McIntosh and this is his second novel from Doubleday. (His first, *WORLD OUT OF MIND*, is one of the best books of 1953.) This one is called *BORN LEADER*. It's set way out yonder among the stars where Earthmen have retreated for the usual good reasons and settled on a planet called Mundis. Colonial strife follows more or less the old familiar pattern, modulated by the peculiar circumstances. Conditions get much the same,

fundamentally, as they are on Earth today. And then—flying saucers! Not exactly, mind you, for the vessel that suddenly appears in space is of the regulation shape. But its purpose and its effect are much the same. Of course, there's a time when things are not too bright for the hero of the yarn. But everything comes out all right. And didn't we expect it to? A good story. But J.T.M. can do far, far better.

The American story is by Edgar Pangborn, and is called *A MIRROR FOR OBSERVERS*. Pangborn wrote *WEST OF THE SUN*, which we thought was rather a lot of ado, but in his *MIRROR* he has really shown us that he can write with power and intensity and sincerity. The basic plot sounds trite—Martians trying to take over Earth by devious means. But the handling of the plot should teach all would-be authors just what can be done with an old idea. And it will keep readers' hearts thumping all along the line. Pathos is there. A little humour. Some violence. And a mighty potential for disaster. Best of all, it has no ending—not in the dry, mechanical, tying-up sense. Please read it. (Doubleday and Co. Inc., 575 Madison Avenue, New York 22, N.Y.)

Non-Fiction

This month we are reviewing in this section two books which, while dealing with more or less the same topic, are diametrically opposite in message. One is bright optimism, the other is deep despair. The one is well-conceived and strictly truthful. The other is most ill-conceived and a long way from the truth.

REPORT ON THE ATOM by Gordon Dean (Eyre and Spottiswoode, 15 Bedford Street, Strand, W.C.2) is a very fine 16s. worth. It is written by the man who was Chairman of the United States Atomic Energy Commission from 1950-1953, a lawyer, a scholar and a man perfectly adapted to the undoubted stresses of modern living. It tells in clear, unadorned language the story of atomic energy as it affects the Commission—and that covers just about every branch of the subject. The dangers are pointed out unemotionally, the difficulties due to international disagreement are shown in their true relation to progress in this field, and no wool is pulled over the readers' eyes in any part of

this multifaceted topic. Gordon Dean is not a scientist, but he understands what scientists are and what they are doing, and why they do it. He knows and he shows that atomic scientists are working for the common good as that idea is conceived by all educated men of the western world.

After a brief survey of the state of atomic knowledge prior to the last war, the author goes on to an absorbingly complete and pleasantly down-to-earth series of chapters on the search for uranium, the conversion of ore into refined material, the dangers, the bombs, power, isotopes, research, security and a survey of all existing centres of atomic research.

The outstanding quality of the writing is level-headedness. Almost, it is objective. Philosophising is at a minimum and the author sticks to facts—such facts as make exciting reading and for the first time give a true and complete picture of the atomic energy set-up. We are taken right into the factories where

the ore is processed. We go into the refining plants and see crude uranium passed through miles and miles of piping to emerge, greatly diminished in quantity, as the pure product. And then we follow it to the piles and see it slipped into its hole and bombarded with neutrons. After that, understandably, all is quiet. The author does not tell us how to make atomic bombs!

But he does tell us what can be done with the radioactive materials that do not go into bombs—and quite a lot of it does not. Here we see a straightforward picture of what the release of atomic energy can mean to mankind when it is not merely brought together to form critical mass. But we also see how long it will be before atomic energy becomes a major economic source of power. Gordon Dean tells us the truth realistically, so that we are left with the truth, unembroidered by sentiment and false slants.

Not so Robert Jungk, who is the author of *TOMORROW IS ALREADY HERE* (Rupert Hart-Davis, 36 Soho Square, W.1), which also costs 16s. Jungk is a man who has had something of a raw deal from life due to his never being

able to adapt to the conditions under which he lived. He has been chased out of his home several times for his political views and once spent a while in prison because he made it too obvious that he did not like Nazism. He settled down for a few years in America as a correspondent for the Swiss Press—a long way from his native Berlin and his German-Jewish friends. And he didn't like it in America either. He left. And wrote *TOMORROW IS ALREADY HERE*, based on his experiences in America.

If you could go through this book and pick out all the very many interesting *facts* you would have something that is well worth reading. The trouble is that these facts are cunningly interwoven with opinions and prejudices that are not so much stated as implied by the deliberate use of emotional words and the frequent peppering with dots. Jungk's thesis is that progress is having a hell of an effect on mankind. Few people would dispute that. As a thesis it is too obvious to need statement. But the way Jungk tackles this thesis is to go around the States looking at as many examples as he can of modern

technology, picking out the worst, most totalitarian aspects and writing them up with fine fanatic fervour. In doing it this way, he has done his own cause irreparable harm because the bias and prejudice are so very blatant. There is no doubt that Jungk has something; we all feel at times that maybe we are moving too far away from the natural scheme of things; we all feel that the past was perhaps rather better than the present and that the future is something of an enigma. And we have been doing it for centuries. There is nothing fundamentally new in the technological picture today. And we know that we cannot go back; that if we did go back, we would not find what we wanted until we had got back to the caves—and then we probably would not want it after all.

Jungk shows us the people who live under close security at Las Alamos; he paints us a picture of the men who are trying to grasp heaven by sending up machines and men, and trying to change the limitations of the body in order that the men might survive with the machines; he derives an indictment of humanity out of the fact that

men in Texas are making rain fall when they want it; he points pathetically to a church in New York that is being scrapped to make way for an office block. And so on. He slips into his book photographs of men in plastic protective clothing, of a man in a centrifuge, of hydroponic experiments on apple trees, of New York at night with all the lights blazing. And he sends out the pathetic heartcry: Where are we going?

The answer, of course, is to a new and better world. The answer is that new worlds always have dark corners and you have to accept the fact. The answer is that it is no worse to wear protective clothing and handle acids than it is to be stripped to the waist and chip coal underground; that it is no worse to grow apples in sand with chemicals than to have millions dying of a potato famine in Ireland; that it is no worse to strap a man into a centrifuge than it is to have him black out and crash in the Battle of Britain; that it is no worse to have millions of lights in a city than to have half-starved youngsters running around with burning torches. Indeed, it might be better.

EVEN IMPORTANT THINGS CAN BE FORGOTTEN IN
THREE HUNDRED YEARS

FOREVER TODAY

by LEN SHAW

Halfway up the hill, Jud paused to wipe his brow. Mab, just ahead, looked back.

"Jud," she thrilled, "we've been here before. Hurry!"

Jud stiffened with alarm. Their global wanderings had taken them to practically every place on earth. So why hurry now? Why incur any risk?

"Take it easy, Mab!"

"Why?" she scoffed. Her eyes flashed. "I'll race you to the top!" Before he could stop her, she bounded forward, fleet as a doe, bronze limbs flashing in the sun.

"Wait for me!"

In panic, Jud hurled himself after her. But she was the swifter footed. She maintained her lead.

Acutely distressed, he laboured upward, sobbing for breath. How could she be so reckless! High spirits, impetuosity, unpredictability

—these were endearing female characteristics in a world of calculated risks; but not when only two human beings were left alive on earth. Waywardness was then a capital liability, and when it spurred Mab to action, Jud suffered fits of stark terror.

Suppose Mab had an accident—broke a leg . . . Or was killed outright—and he was left alone, faced with eternal solitude . . . ?

She waited at the top, silhouetted on the skyline, her nude beauty bringing a sudden constriction into his throat—for they had taken the immortality capsules in their prime, some three centuries ago, and age since then had passed them by. As he approached, she tossed her head arrogantly, and he was stung to sudden anger.

"You devil! Why didn't you wait?"

The limpid gaze derided him. "Why should I?"

"One of these days——"

"*You're going to miss me, Honey,*" she carolled, recalling a popular tune of the days before radio activity had wiped a lethal hand round the globe. "Remember Sophie Tucker?"

He stared. "Who?"

"Your memory, Jud! It's dreadful!"

"It's all so long ago."

She laughed. "I remember."

"Well, I don't," he sulked.

"And it's not so funny either!"

"Old Worry-guts!" she mocked, then pointed below, "Look down there. D'you remember *that*?"

He grabbed her hand before he looked. The cliff curved round, horseshoe fashion, enclosing a green valley far below.

Jud wondered what he was expected to remember. Nothing but shimmering green was visible. There as elsewhere, Nature would have erased man's puny architecture, leveling it with wind and rain, heat and cold, and wrapping it in a verdant shroud.

He shook his head—although one feature, perhaps,

had some remote significance. At the narrow entrance, where once there had been a waterfall, there was a ledge of rock which seemed vaguely familiar. But it meant nothing to him now. Or—and a wisp of fear licked his spine—did it...?

"Darling!" Mab reproached. "Remember the little Greek Temple? The marble bath?"

"Temple?" He screwed up his face. "Bath?"

"Old Misery!" she chided. She pulled him close and kissed him. "You're not very flattering. We spent our honeymoon down there!"

They set off towards the valley hand in hand; but even the last man in the world cannot hold the last woman's hand for ever. Presently they swung separately downhill. Mab led the way; and Jud, following reluctantly, was apprehensive of some indefinable evil.

They halted at the five-foot high stone ridge. Jud experienced a nebulous stirring of memory. Nothing more. Three hundred years was a long, long time ago . . .

Mab pointed to the crude stone steps. "Remember them, Jud? We always used them, going in. But coming out, we jumped——" In a fever of recollection she swung round. "Ah! See that big smooth stone? We used to jump hand in hand and see if we could land on it. And we generally did."

Jud nodded absently. He stared into the trees crowding the valley, wondering why tremors of fright kept slithering along his spine.

He blanched as a scream rang out. "W-what was that?" "Listen!"

Mab held up a peremptory finger. Head cocked, she waited, smiling incredulously.

The scream was repeated. She clapped her hands.

"Nebuchadnezzar!" she exclaimed joyously. Before Jud could stop her, she was over the ridge and racing towards the trees.

"Hey, Mab!" he yelled. "Wait for me!"

"Nebuchadnezzar!" she was calling. "Nebby darling! Where are you?"

Shaking with fright, Jud scrambled after her. He

shouted hoarsely, commanding her to wait; but as he plunged under the canopy of branches, he knew that if they lived a thousand years she would never wait for anyone.

An hour later, lost and dejected, he almost fell through a riot of briar and bramble into the marble bath. With a strange constriction in his chest, he traced its decayed outline, then sank down on a tree trunk, letting his thoughts wander. Presently he became aware that the outline of the past was shaping in his mind.

Suddenly he remembered the little temple. It was nearby. Shortly he would go to it. Mab would be there, waiting for him. But first . . .

He dug down in his mind, anxious to identify the fear which clothed him now like a skin. A nostalgic memory-whiff paid tribute to remote honeymoon delights and was crowded out by a vivid recollection of their return to the city, the discovery that the atom bomb had done its worst and that, henceforward,

he and Mab would be eternally alone.

They had come back, intent on raising a family which would ultimately repopulate the globe, but their union had not been fruitful.

Years had rolled by, and he had eventually fallen victim to a morbid obsession. He had read somewhere that man is not fitted to bear the burden of immortality and that, faced with a sempiternal succession of days and nights, boredom would ultimately drive him mad. And he had believed that this was true.

He had been terrified by the thought of inevitable madness. Neither Mab nor himself, he had decided, should succumb to such a fate. Anything was preferable to that. Even—and it seemed the only remedy—their simultaneous annihilation in the reasonably near future.

He remembered taking some action—couldn't recall it clearly—

"Mab!" he yelled suddenly.

He jumped up, sweating.

"Mab!" He ran in the direction of the temple, crashing through the undergrowth,

disregarding the low branches which whipped and bloodied his face. "*Mab!*"

When he found her, she was waiting at the ruined temple, sitting on a broken stone pillar. Flinging himself at her feet, he held her hand, beyond utterance of words. He closed his eyes, letting reassurance seep into his overwrought mind.

Then the scream was repeated, almost in his ear, and he jumped up, shaking with fright.

"What the devil——"

"Silly boy!" Mab smiled reproachfully. "It's only Nebuchadnezzar. See!" She raised a brown arm on which perched a beady-eyed green bird. "Nebby!" she admonished it severely. "You mustn't make that horrid noise!"

The bird blinked wickedly, gabbling and shuffling down her arm. Then it turned a baleful glare on Jud.

"The parrot!" gasped Jud, remembering.

"Bottoms up!" said Nebuchadnezzar. "Pretty Polly! Pretty Polly!"

Jud relaxed. Memories came

swirling back, tearing the veil of forgetfulness.

He stroked the bird hesitantly. It had been their only pet. When he and Mab had finally left the valley—and he recalled that for some obscure reason they had used the steps instead of leaping the barrier together—Nebuchadnezzar had hidden and they had gone without him. They had concluded that some mischance had befallen their pet—yet here he was, full of life, and looking wiser and more wicked than ever!

"Pretty Polly my foot!" grunted Jud. "You're an old rascal!"

"Have some nuts!" said Nebuchadnezzar.

They explored the tree-choked ruins of the temple together, Mab chattering happily and Jud craving to get away and turn his back on the valley for ever.

He peered about him uneasily, fearful that the most innocent action might spring some hidden trap. Certain that he had taken steps to defeat the prospect of ulti-

mate madness, his memory stubbornly refused to reveal the method adopted; and an appeal to Mab would have been useless, for she knew nothing whatsoever about it.

Jud cursed his own gullibility. Long before leaving the valley to roam the world, he had abandoned the stupid theory. They had both retained their mental and physical vigour, their zest for living had been renewed each day, and eternity was merely a word to play with. They had lived in the eternal present. It was forever today, and today life was very sweet.

To his immense relief, Mab agreed to leave the valley before sunset, her only stipulation being that they should take the parrot with them.

"You shan't give us the slip this time!" she told the bird; and Jud, holding it, tightened his grip on its scaly claws. He was taking no chances, being convinced that Mab would not leave without it.

"You're coming with us, my lady," he said grimly. "Or else . . ."

The horizon was ablaze with sunset colours when they emerged from the trees and strode over the last few yards of grass to the valley's entrance. Jud, whose fear mounted every second, was promising himself that it would soon be left behind, when Mab, leading as usual, sprinted ahead without warning.

"Come on, Jud!" She tossed a challenge over her shoulder. "I'll race you to Lovers' Leap!"

Jud gasped. Lovers' Leap! His scalp prickled with fright as at last he remembered!

His grip on the parrot relaxed. Nebuchadnezzar squawked wildly, beating his wings. Jud wasted a vital half second before flinging the bird away and racing after Mab."

"Stop!" he bellowed. "Mab! Mab!"

Her reckless laughter taunted him and, contrariwise, she put on speed. He shouted no more, pouring every particle of energy in a supreme effort to catch her before she jumped.

But her lead was too great.

He was on her heels as she leapt, and he leapt with her, gripping her backward-flung hand in brief farewell. Then they thudded down on the smooth, round stone below, detonating the explosive he had concealed beneath it so many years ago.

Five minutes after the explosion had caused his homeward flight to swerve at a panic tangent, Nebuchadnezzar perched in his favourite tree and preened his ruffled plumage.

Despite his advanced age, for the old gentleman was halfway through his seventh century, he had no thought for the past, no concern for the future. Today he had lived—except for the human interruption—satisfactorily. And with the dawn another equally satisfactory today would begin.

He blinked drowsily and, before settling down for the night, delivered himself of a brief comment on the situation.

"Hell's bells!" said Nebuchadnezzar. "Have some nuts!"

THE MARCH OF SCIENCE

Many people appear to think that theoretical science is rather a waste of time, at best an intellectual luxury and at worst a drain on available resources. Superficially, it may seem that their views are confirmed by the recent report of the British Commonwealth Scientific Office in North America, which shows that of the enormous amount of money spent by the Federal Government on scientific research during the past two years, 94 per cent. went on applied science and only 6 per cent. on basic research. But closer inspection of the report and a wider view of the sentiments of American scientists indicates quite clearly that there is great anxiety caused by these figures. A great many leading scientists in the States have expressed the view that if this unbalanced "mollycoddling" of applied science continues much longer, there will be no new basic science to be applied. They point out that it is essential for theory and application to advance together. Any other way is not progress.

Some anti-theorists may scize upon the news that element No. 99 has recently been produced at the University of California and ask what use this element is, and is the expense which led to its discovery really justified? The answer, of course, is that we don't know at the moment, but that the applied scientists now have another bottle on the shelf that they can try out for uses. The new element—provisionally called *ekaholmium*—was made in the cyclotron at Berkeley. It takes us one step further away from the old fashioned schoolbook story that there are only 92 elements. Perhaps there are only 92 *natural* elements, but man has come along and made some new ones for himself. Ekaholmium has an atomic weight of 247, is radioactive but not fissile. It is a nuclear-additive derivative of uranium, but it has no explosive uses. Nor does it seem likely that ekaholmium will be useful in the production of atomic power. But somewhere, sometime, somebody will find a use for it. Very few

scientific discoveries remain unused for long.

Even so, it does seem that some recent theoretical research by Dr. G. Bowen, an Australian scientist, will be a long time in finding application. Dr. Bowen suddenly got the idea that if man can make rain by dropping particles into clouds, maybe nature can do it similarly. He looked into the records of heavy rainfall and tried to link them up with the records for meteor showers. He found a positive correlation—heavy rain fell much more often than chance would allow just thirty days after a meteor shower. In Dr. Bowen's view, the fine meteoric dust that accompanies such showers takes about thirty days to percolate down through Earth's atmosphere to the level of the rain clouds. Some of the dust particles have the shape of a silver iodide crystal or the shape of a dry ice crystal; when they fall into the clouds they cause rain, just as man causes rain when he shoots silver iodide or dry ice into supercharged rain clouds. A point in confirmation of this theory is that the rain which falls thirty days after a meteor shower is of much the same character as that which falls when man does the job—very

heavy "cloudburst" type, rather than the soft fall caused by normal atmospheric conditions. Whether this knowledge can be used is another matter.

The Radiochemical Centre at Amersham, Buckinghamshire, now makes available to industry and academic research institutions fourteen tracer aminoacids, a tracer protein and a tracer alga. These by-products of atomic research are destined to have a very far-reaching effect on biological science. They enable researchers to study problems of animal and plant metabolism, nutrition, reproduction and circulation in a way never before possible. Simply by feeding in a tracer and holding a geiger counter against the organism the investigator can follow the tracer wherever it goes, and at any point he can take it out again and see what has happened to it.

It seems likely that information supplied by tracers will clear up many long-standing problems in biology, will be a death blow to some theories, and will give birth to new and better explanations of what life really is. A long way from Hiroshima.

*When power politics turned the world
upside down and inverted normal values
he refused to take drugs, and so become
an*

ADDICT

by

FRANK QUATTROCCHI

There were just enough lights and they were so placed that no member of the gathering was more than a semi-silhouette. The air in the small room was close, still, and not fresh. Low-voiced conversation ebbed and flowed from small groups of men and women, who sat on wooden crates or lounged on improvised cots.

"Can you describe your—feelings?"

"I . . . I'd rather not try."

"Good. Take your time. Relax."

A voice from the deep shadows addressed the pair, a middle aged woman and a

youth. "Don't resist it, son. Let your mind go free."

"I'm trying to," replied the youth.

Elsewhere in the room two figures lay side by side on a rough cot of boards.

"I worry, John," said one, a woman.

"Don't. It does no good now," said the man.

"I know . . . But she is so young. Much too young for this."

"Yes."

"And I long to bring her here. With us."

The man sighed and regarded the woman in silence for a moment. Then, extend-

ing his hand to touch hers, he said: "She is helping to make that unnecessary."

Near the couple, but in the centre of the room, three men faced each other. They were seated on boxes and were bent far forward until their heads nearly touched.

"You just can't get it this way."

"It's the only way there is."

"Maybe you think I'm just scared . . ."

"No."

". . . but that isn't it. It's just like a work holiday. You wait all year for one and then you spend it trying to cram everything into that one damned day so you won't miss anything."

"Alas," said the third, nodding. For a second his sharp features caught in a ray of light. Becoming aware of it he adjusted his position on the box and bent forward again into the shadow.

"If there was just something you could *take* . . ." continued the first speaker.

"But there isn't. No hope in that direction."

"I know, I know. But if there only was . . ."

"You perhaps would not like it," interrupted the third. "You would perhaps find it as bad as . . ."

"Damn it, I *know* that. You don't have to harp. But, well, you guys don't work on an assembly line. Go without it for a half day like I have to and you can't work. You begin to *think*. Then you go haywire. You guys can go off *all* the time . . ."

"Not, unfortunately, true," said the second speaker. "Not a bit. They're beginning to get insistent about Harmony Sessions. You get out of them because you work on the assembly line. But we have to go. Try to harmonise without it. Just try . . ."

Across the room the youth was close to a sob. The woman was comforting him.

"Easy, boy, it is always like this—at first."

"I . . . I *hurt*!"

"Yes. That too."

"Why . . .?"

"Because," said the woman, "you are not accustomed."

"No. I mean why do we have to meet like this?"

"It is illegal . . ."

"Yes, but *why*? Why do they call us *Addicts*?"

"It is only a word . . ."

"Why do they hunt us . . ."

"Tell him," said a voice from the shadows. "Tell him about *Social Harmony* . . . *Full Production* . . . tell him what kind of a . . ."

"No," said the woman. "Let me explain. He is my son."

"Tell him," continued the heated voice, "about how we are so unaccustomed to life that it hurts us to feel it. Tell him . . ."

At that instant the entire room was filled with a brilliant blue floodlight. Instantaneous small flashes joined it, followed instantly by ear-shattering reports.

Then, as the blue light dimmed to a ruddy glow and the darkness shyly returned, a living moist-red colour grew on the rough floor. Finally the *chump, chump, chump* sound of heavy boots gave way to absolute silence.

GEORGE THREE grasped the hollow plastic box and pulled it gently from its conveyor clasps. He swung it down and

to his right in a body motion that involved little or no use of his arm muscles. It had no sooner come into contact with the work bench when his deft fingers found their way inside, moved over familiar surfaces, and fitted tiny metal parts into their proper places. The operation complete, he swung his body once more and placed the box into the waiting fingers of the assembler to his right.

The entire action occupied fifteen seconds precisely. George Three now turned to his far left and extended his hands to repeat the process. Again he positioned the box on the assembly bench and again his fingers found their way over the smooth convolutions of the box's interior.

"Good morning, Lilian Four," he said without looking at the assembler.

"Good morning, George Three," the girl said. "How are you?"

But no more conversation was permitted under the rules. He did not answer.

As each part snapped precisely in place under the gentle urging of his fingers it pro-

duced a tiny metal click. The clicks thus formed fell into a pattern. George Three was aware of this, for it was important to him. Gradually the pattern of small sounds he produced would join other patterns set up down the long assembly line and an intricate little symphony of small sounds would grow. But that needed time. The morning was still young.

As he turned again to place the box into the next assembler's hands George Three permitted himself the luxury of glancing at her. But he found that she was turned towards her next partner. A very slight feeling of disappointment passed through him. But he rejected it; there were infinitely more important things . . .

The conveyor whirled its small sound and brought another box into place. The box swung back and forth briefly. Three's hands caught it and swung it down in front of him. His fingers poked the three metal parts into place rhythmically and turned.

He found the girl looking

at him. In the brief period before he turned away he brazenly returned her look. His heart beat at the act, for it was the first time he had ever dared a breach of the rule against personalising on the assembly line.

She wore a cloth wrapped tightly around her head to hold back her long hair. Long hair was frowned upon in the factory, even for those who did not work near the machines. But Lilian Four seemed to get away with the infraction. It was a matter of comment for the members of the shift.

George Three shook the train of thought from his mind. He turned back to the conveyor. He was slightly off rhythm. He speeded up a bit and the tiny metal clicks again fell into the precisely timed sequence of before. He deposited the box into her waiting hands and turned without looking at her, even out of the corner of his eye.

But his rhythm was still not perfect. For some reason he seemed to be resisting the process of Harmonisation that would bring the assembly line

into optimum production. He could still hear the individual sounds of the line. Such sounds disappeared once you were in Harmony with all the rest of the assemblers. Then, gradually, sight would also disappear. Then you could experience the full power of being one with your fellow workers. Then you produced!

George Three's mind lazed along soft byeways. He lolled along the bank of a large, slow moving body of water, a wide, languid river that coursed its gentle way down toward the great sea. He was beside it. Soon he would walk into the water, join the river, become a part of it. It was a warm, caressing river that slowly rolled its way down to the great sea . . .

But something stopped him. The river faded. The bank was gone. A metal part snapped loudly. His finger hurt him. He saw the bench. He heard the conveyor. He felt a stinging in his nose.

George Three sneezed.

"*You* again," said the factory physician squinting down

at him through thick glasses. "Stand up."

George Three stood and allowed the portly man to pry open his mouth roughly. An almost overpowering impulse to sneeze swept him just then. The physician jumped back quickly and eyed him bitterly.

"Sorry, sir."

The man continued his examination. He roughly unbuttoned the top of George Three's overalls and placed his ear on his pink chest. He thumped George Three's ribs and stepped back sighing. He surveyed George Three's somewhat soft, medium frame with disgust.

"This is the third time," he said severely.

"Is it, sir?"

"What have you to say about it?"

"I . . . I'm sorry, sir."

The fat physician eyed him in silence for a moment and then looked away briefly. "You *are* happy here, eh?"

"Oh yes, sir."

"I believe Sanitation has applied for labourers," continued the man, examining his

short fingernails. "Fresh air job, you know."

George Three's eyes widened. He desperately fought the sneeze that was now inexorably forming in his nasal passages.

". . . or perhaps a cooler climate. Our Tibetan allies have signified . . ."

George Three's eyes watered. He took short breaths through his mouth. A flame burned between his eyes.

"Sneeze, damn you, sneeze!" snapped the physician.

"No, sir . . ."

The storm broke. George Three was nearly thrown off his feet by the violence of the outbursts. Tears ran down his red face as the great relieving sneezes showered from him. The physician had retreated a few feet and was waiting in bitter silence.

"You are quite through?" he said, finally.

"Yes, sir."

"You sneeze on purpose of course," the other said quite casually.

"Oh no . . ."

"It amounts to that. You

did, of course, take *Tab* this morning?"

"Yes sir."

"It is good to take *Tab*, isn't it?"

"Yes, sir, very good, sir."

"And it doesn't make you sneeze, does it? You only imagined it before, didn't you?"

"Yes, sir, I only imagined it."

"For it is impossible—un-thinkable—that anyone would be allergic to *Tab*. The Committee has recommended *Tab*. That alone would insure that anyone could take *Tab* without ill effects, wouldn't it?"

"Yes, sir."

"Even," continued the physician in a lyrical voice, "if the greatest government doctors did not tell us that no allergy is possible—which they do."

"Yes, sir."

"And you wouldn't think of abstaining, becoming an *Addict*, would you—*son*?"

"No, no, sir."

"It is through the blessing of *Tab* that we reach Social Harmony and through Social Harmony, Full Production.

You know that, don't you, George?"

George Three knew that.

"And those who abstain reject both Social Harmony and Full Production thereby, don't they, *my boy*?"

"Yes, sir."

"And are thus *traitors*?"

"Traitors," said George Three.

"And traitors are sent to Reconditioning Camps . . ."

"Reconditioning Camps."

Once there had been a piano player who lived on George Three's block. One of his room-mates had caught him washing his Tab ration down the drain. They had come for him, of course, within an hour. He had maintained that he could play better as an Addict. It was a sordid story. But, so the story went, Reconditioning Camp had pulled him through. A year later he was able to play in the camp band.

"Now, George," continued the factory physician. "I believe you know what to do. It is a simple matter of pulling one's self together, as it were. *We* understand here, George. We are prepared to be tolerant.

But, of course, this is the third time. Now tell me, my boy, how can I help you?"

"I . . . I was thinking, sir . . . that maybe . . . you could give me something to stop my sneezing . . ."

"I have!" snapped the physician through clenched teeth. Then in a cool, even voice he added: "I have *Tab*. Take it!"

George Three popped the large pink tablet into his mouth and gulped it down quickly.

Ashew!

The factory yard was almost deserted. An elderly gardener was lazily trimming a vast green hedge near the administration building. The usual pair of guards were walking slowly along the flagstone sidewalk. A small flock of plaster of paris ducks caught up the low rays of the afternoon sun and seemed almost to waddle on the grass.

Shift C had gone home, of course. It disappointed him. George Three had hoped to catch up with them. But he had been too long in the clinic. They were all gone

home. He dared to hate the portly factory physician for a minute. But the hate would not stay. Tab was taking care of that.

Ashew!

He especially wanted to see Lilian Four. She was Shift C's captain in the forthcoming production competition. He wanted to apologise to her, for now Shift C had no chance of winning. After today their record must put them in last place. The best George Three could do was to hope that the girl would not take the loss too hard.

There were the others, too. Some of them had bet heavily on the competition. They would be pretty mad at him. There was very little he could say to them except that he was sorry, but he ought to have been able to say it. Shift C meant a great deal to him. In a way it meant more to him that the shift would suffer than that he was now on probation.

As he made his way toward the gate George Three pondered the Shift's importance to him. It was his one real contact with the world now

that he had been transferred to the city. It extended him beyond the drab, grey outlines of his work-sleep-eat existence. Without it he was a weak, poor *individual*. It was not good to be an individual. It was somehow wrong, perhaps even traitorous . . .

Ashew!

George Three entered his dark attic room cautiously, a rolled paper club ready. He reached for the light switch with his left hand and tensed his whole body as he threw the switch. Instantly he was upon them, swatting the floor frantically. He caught one huge rat a glancing blow and drew satisfaction from the animal's squeal. He darted across the long, narrow room and very nearly headed off another rat. He brought the frayed paper club down solidly. But he missed. Shivering at the sight of bared yellow fangs, he half-heartedly pursued the last animal to the small closet.

The conventional chase ended, he relaxed. From his pocket he produced a small key and inserted it in the lock of a small floor cabinet. As

the small lock clicked open he felt his usual pride at the one small piece of furniture he had added to the sparsely furnished room. Inside he kept his breakfast and evening meal. Tonight he added a small, round loaf of hard cheese, a half loaf of synbread and a tube of syncafé.

But the cabinet was more than a repository for his food. It also contained some of his pride, and even some small rebelliousness. It represented a clear victory over the rats. For all of their instinctual cleverness they had never been able to pierce its tight-fitting door or simple lock.

Furthermore, neither had his landlady. The old lady freely and frequently entered his room—the drawers of his dresser often attested to her curiosity and inept explorations. But she had never been able to pick the lock. She did not dare break it.

George Three ate his meal leisurely stretched out on the reclining viewer chair. He gulped down the sandwich, being sure he had dropped no large crumbs for the rats, and drank the cold syncafé from

his dirty glass. Then he switched on the viewer and made himself comfortable for the evening. He did not feel up to his usual walk up and down the block.

A title frame settled out of the pattern of coloured streaks. In type designed to imitate a child's block printing the words "Sky Rockets Again" glowed in bright colours. This then faded into a cartoon drawing of a professor with cap and gown. The Absent Minded Professor. He was puzzling over a weird contrivance that George Three could not recognise. His eyes were crossed.

"The professors have been at it again," declared the commentator. "'What is it this time?' you ask. 'Proof of Fermat's last theorem? Trisected angle? Perpetual motion machine?' No, folks, it's our old friend the . . ."

During the pause the scene changed to a rather poorly exposed film.

"*Sky Rocket!* Yes sir, the sky rocket. And—get this—this one was headed for *Mars!*"

"Watch closely during the

next shots. They were taken from a concealed spot near the gang's secret experiment station. Authorised News Service found out about the professors' weird plans and managed to sneak in a camera to bring you these exclusive pictures.

"Watch now," commanded the commentator in a low, conspiratorial voice.

George Three strained to recognise a number of unrecognisable objects on the viewer screen. All he could make out were several human figures moving about among what appeared to be packing cases.

"Watch, watch! You'll see the faces of three well-known Columbia University professors, no less. Caught in this absurdity!"

A shaky closeup unfolded on the screen. For a brief instant a determined-faced individual flashed into view, then another and still another. The scene shifted again to show the three men bending over an open crate. They were tugging at something inside. But the scene changed abruptly

back to the face of the commentator.

"The professors will not be prosecuted, of course," said the commentator, smiling brightly. "After all, one may be as ridiculous as he pleases in this Society. They are likely to be asked to resign from their university jobs, however—one would scarcely want such as they teaching our State technicians of the future—and they will surrender their *playthings*."

A comical musical selection finished off the sequence.

George Three smiled at the viewer. He would have liked to see the sky rocket the nutty professors had built.

Professors were, as the commentator had implied, a weird crew. George Three remembered secondary school. There had been one old character there—George Three couldn't remember his name; it was a strange one. Anyway, the professor had singled him, George Three, out for a lot of special numbers lectures. He had been a positive bug about numbers.

George Three had been

very young and enthusiastic then. Numbers had interested him, and he had eagerly soaked up all of that nonsense. He remembered not one whit of it now, but then he had taken long walks with the buggy old professor, and had actually worked on special extra-curricular problems...

Why the absurd old man had bothered, George Three did not know. He had never any use for the numbers. He had been transferred to the City shortly after they took the old man away to the booby hatch or somewhere.

At 2100 George Three's alarm clock jangled into action. He had been dozing. Reluctantly he arose from the reclining chair and turned it off. The alarm was to remind him of bedtime Tab. He found the characteristic envelope on the dresser by the clock. He broke open the heavy brown paper and rolled one of the pink pills onto his hand. He was not bound to take it tonight, he knew. The extra tablet he had taken in the factory clinic made up a good minimum daily dose.

Still, it was better to do so. The 2100 dosage was a half tablet. It would cause him trouble, but not so much as a full one. Besides, it did make him sleep better once the sneezing had subsided. It cut down on his dreams, for example. And it made things easier the next morning.

He broke the tablet in two roughly equal parts with his thumb nail and placed the larger fragment back into the envelope. Awkwardly holding the other piece in the cup of his right hand he crossed the room and poured water into the dirty syncafé glass. It was difficult. He spilled some of the water onto the small bedside table. In correcting this his right hand turned and dropped the piece of pill. It hit the bare floor and rolled under the bed.

It was exasperating. George Three had a slight headache from watching the viewer. Disconcerted by his awkwardness and pained by the headache, he fumbled around with his hands. A sliver of wood found its way up his fingernail. Choking back a sob, he lowered himself to the floor

and attempted to crawl on hands and knees. But he bumped his head on the box of slats. Demoralised and frustrated, he wiped his nose, forced back a sneeze, and put his injured finger in his mouth.

When he finally found the pill it had been reduced to a small pink spotch by his careless foot. He undressed and fell into bed.

He woke up face to face with the rat. Perched on the bureau top a scant three feet from his head, it observed him with wide, unblinking eyes.

For a long moment George Three did not breathe. It was morning, and a morning sun sent long beams of light through a small, dingy east window. Those beams caught on the filthy grey animal's fur and whiskers, giving it a weird, flaming appearance.

Then George Three shuddered in horror and clutched the thin blanket that was partly covering his body. "Go . . ." he choked out in a high-pitched voice.

But the rat did not move.

Terror gave way to a feeling of desperation. George Three shot out a hand towards his

shoe. He caught it up and froze. Then, an animal cunning rising in him, he very slowly cocked his arm.

Still the animal did not move. A slight breeze shivered its glowing fur slightly.

A fragment of courage came to George Three. The rat was his enemy. He would now destroy it . . .

His hand had slowly risen above his head. He tensed himself to let the shoe fly.

But just then the rat let out a very slight mewing sound and *toppled from the bureau top*. There was a slight flop, then silence.

George Three waited a moment, then rose to a sitting position where he could see the floor.

The rat lay on its back, its feet twitching faintly.

Quickly George Three was upon it, battering its head with frantic blows. It took many such blows to satisfy his feelings of hate and horror. When he had rendered the helpless animal a pulp of reddened fur, he found the answer.

The rat had devoured his envelope of Tab. A bit of

torn paper and a pinch of pink powder was all that remained of it . . .

He could not go to work. Completely dressed, the bit of cheese and glass of syn-café untouched before him, he faced that dreadful fact with growing apathy.

He had no more Tab. But it wouldn't matter if he had it.

The morning dosage was two full tablets. He might be able to borrow that many in time. There was, God knew, no scarcity of Tab. But by the time he got the tablets it would be time to catch the Commuter.

Once he had tried that. He had overslept. He had taken the stiff morning dose on the run. It had been miserable. He had literally staggered to work, a howling, snorting, bleary-eyed wreck. They had almost put him off the Commuter for sneezing in the conductor's face. At work the factory room had shook with his sneezes. Finally they had had to give him a sedative.

He could not go to work without Tab. Once he had tried merely reducing the

dose. That was to escape the full fury of his allergic reaction.

He had fallen behind on the assembly line practically with the first box. He had not been able to co-ordinate well enough, adjust to tempo well enough, *harmonise* enough.

Besides, he was on probation . . .

No, it was all over now. Some dreadful camp awaited. Some banishment. Away from Shift C. Away from Lilian Four . . .

He glanced down at the dead rat. Somehow he did not hate the poor, slaughtered beast. He almost pitied it. It had not even resisted when he pummelled it with his shoe. He remembered a fleeting glimpse of its animal face just before he had flattened it with a savage blow.

There had been a kind of serenity. The eyes had been soft, the flame of ferocity gone.

Tab had done that. The animal had *loved* him during that final instant!

George Three rejected the thought. No, Tab had killed

some essential part of the animal. Killed it so thoroughly that bashing its head in now no longer meant anything...

Well, there wasn't much time left. The Work Officer would soon come to see if he had died or become too sick to move. Barring that, there was no excuse for not appearing for work. Men and women occasionally arrived at work too ill to take their places on assembly lines. But arrive at work—on time—they certainly did. It was the law. More than that, it was a matter of public morals. You appeared before the factory physician and were examined. If the examination revealed a true disfunction you were given treatment.

Otherwise it could be very, very bad. Psychosomatic ills were what people had on their own off-duty time. Conditioning was entirely too strong for a mere imaginary ill to stand in the way of Full Production. Besides, Tab was supposed to take care of that.

George Three surveyed the room. Well, what was there to leave? Now that the work was gone there remained only

what was contained in this room. The product of his life was here; what did it amount to?

The small wooden cabinet, its contents—nearly gone. One off-duty jacket and trouser combination—variously patched. Two pairs of work overalls—regulation and hence now valueless. A pair of dress slippers (good!) work shoes—also regulation and forbidden for non-factory workers. The alarm clock.

Once he had owned three books. One had been a book of mathematics he had received from that old fool professor. The others had been cheap novels. But the rats had long since eaten away first the glue, then the covers, and finally the pages.

All the personal items, the razor, soap, wash cloth, linens, etc., dated from his transfer to the City or later. Of the period before there remained not a shred or scrap. He had no photographs, souvenirs, letters, nothing to remind him of that vaguely remembered, but somehow nostalgic, period.

Well, what *could* he have?

He had no knowledge of his parents—did anybody? He vaguely remembered the farm. There had been cows. Or pigs or something. Not much happened to you on the farm. You did errands or something and were taught some things. Practical.

He did remember the village. He remembered crying the whole first day. But soon there was school, and school was good. There were things to learn and repeat. Things to be read from books—there were always plenty of books in school. And things to write—did he still know how?

But most of all he remembered the Professor and one other student. Despite the feeling that the Professor had been something of a freak—the wholly impractical numbers and other things too—he felt a fondness now for the old man. He had certainly been interested in numbers *then*.

And there was another student. A girl . . .

But all of that was gone. And, thought George Three, so be it. When the Work Officer came for him it would

be over anyway. He would just walk into that door and take him along. That is what happened at village and that is what would happen now.

George Three found a piece of cardboard and brought himself to the job of removing the carcass of the rat. Gingerly and with disgust, he slipped the cardboard under the dead animal, quickly moved to the window, and tossed it out. He watched the inert body tumble in the air and land with a slight bounce on the concrete two stories below.

His eyes remained fixed on the small grey body for a minute and then strayed around on the scene below. His only window opened over the cluttered alley. Somehow the sanitation squads did not come around very often in this district. The alley was all but impassable in places. Every conceivable kind of refuse was there. In places head-high heaps of rusting or rotting trash rose under windows or around doors. Here and there a dirty wisp of smoke curled from a pile. It stank terribly.

George Three retreated from the window in disgust, as he always did. But he stopped and reapproached it. *Refuse*. Was he, George Three, not refuse now? Refuse in the same way that the rat was, except that he was alive? And indeed, how much alive?

The small grey spot fascinated him. It had bounced, he remembered. Would he?

Suddenly there was a knock on the door.

So they had come already!

The knock was repeated.

George Three placed a knee upon the window sill . . .

Again the knock.

. . . and awkwardly brought up the other one. It struck him as odd that they knocked so long. But it did not matter.

"George . . . George Three," said a muffled voice.

Stunned, George Three teetered on his knees.

It was the voice of Lilian Four.

So they had sent *her*. They had sent Lilian Four to see if he had died. Well . . .

"George!"

The thought swept him. It shook and saddened him.

Gone now was the last thing, the very last thing that he had saved. *Now*, surely there was nothing separating him from the rat below. A matter of a hundred feet of empty air. That was all.

"George Three! Are you dead?"

Soon. Soon. He moved forward on the sill.

The simple latch on his door clicked open.

"George!" said the girl, bursting into the room.

Against his will he turned. The girl's eyes were wide, her face flushed. She no longer wore the cloth over her hair.

"Don't, oh please don't, George."

George Three's mind caught the tone of her voice. She had used his first name all by itself.

"*They're after me too,*" she said, running to him.

He reached above his head, his hands seeking the bare curtain rod. It gave way, pulling nails from the rotten moulding. He slid forward toward the empty air . . . He turned and twisted his body, grabbed for the window sill. The board was loose. It gave slowly with his increasing

weight upon it. His arm looped around the sill to hold on to the plaster wall itself. He checked his fall.

"They . . . they sent *you*," said George Three in a husky voice, his face livid from strain and exertion. "They sent you to bring me in."

"No! No!"

"They sent you . . . because they *knew* . . ." He could not finish.

"No, George," she said, softly but firmly. "I came because they're after me too. I . . . I came to help you . . . escape."

"*You?* They're after *you*?"

With difficulty and with Lilian Four's help he finally was able to pull himself through the narrow window and back into the room. He collapsed into a battered chair.

"My father and mother . . . they were caught last night . . ."

"Your . . .?"

"Yes. When I was sent to the City my father and mother followed me—there was another reason also, but I can't tell you much about that yet.

"Anyway they weren't discovered—until last night. They

were found in . . . a place. There was a photograph—of me . . ."

For a time she was silent.

"I found them . . . afterwards."

George Three tried to grasp the idea of "father" and "mother" and "parents" but he was only partly able to do so. The rest was a complete mystery to him.

"My parents were—*Addicts*, *Abstainers*."

The calm revelation shook George Three. Such things were alien to him. They came to one on the viewer on Saturday nights. They belonged to the world of stories. They belonged to a world that citizens dreaded and hated.

"Are *you* an . . . addict?"

The question escaped him almost involuntarily. He both dreaded and longed for her answer.

"No, not fully," the girl answered, lowering her head. "Sometimes I am able to abstain for a while. But not for long. One can't abstain and work. *You* know that, don't you, George Three?"

"Yes," said George Three, "but I'm no *Addict*!" He

was somehow sorry he had made the assertion.

"No," said the girl. "You aren't. Yet."

"I . . . I . . . I'm allergic to Tab."

"I know. My father told me about you . . . about people like you."

"What?"

"Yes. Your allergy is—psychosomatic."

"That's what the physician told me at the factory . . ."

"There's more to it than that, George Three," the girl said with a strange expression on her face. "I'll tell you more—later."

"How did you know I would be here?" George Three suddenly asked.

"I didn't. But I hoped to catch you before you left. I knew they were going to reassign you. The physician told someone. He said they were going to send you to Reconditioning today. I came as soon as I could to warn you."

"They were after you too," George Three said. "Why didn't you just escape—or something?"

The girl looked away from

him. "There are several reasons, George Three. But we have to get out of here. We have to go . . ."

"You ain't goin' anyplace," snapped a female voice from the doorway. "I thought I heard the front door open. I heard the whole thing. I'm turnin' you over!"

It was George Three's landlady. The gnarled and stooped old woman hobbled into the room. She held an ancient pistol in remarkably steady, thin hands.

"Dad gave it to me just before he croaked," she explained, her face twisted into a grotesque smile. "To protect ma virtue!"

She backed them to the bed and very slowly took a seat in front of them. George Three slumped limply, his eyes blank. The girl said nothing. She folded her hands on her lap and sat very straight on the sagging bed. Her face was hard, George Three noticed, as she stared back at the old woman.

"Ya make a real pretty couple," cackled the landlady. Then, turning to George Three, she said, lewdly: "Bet

you dreamed o' this one on that bed a many a night, eh, George?"

George Three blushed. It was entirely involuntary, for he felt only a deadening apathy. The clock on the bureau top was the only sound in the room for a long moment.

Then Lilian Four spoke. "It's time for first period Tab, isn't it?"

"Ain't time yet," snapped the old woman.

"It is though," continued the girl. "It's time right now."

"Ain't! And you can save your tricks, sister." But the old voice lacked conviction.

"My clock . . . is just behind you, Mrs. Eighteen," George Three managed in a strained voice.

"And ain't you the clever one, too," said the landlady, waving her pistol at him menacingly. "You think the old gal's dumb enough to turn around, eh?"

"I'll . . . I'll get it for you," suggested George Three.

"Shut up!" she shouted, her wrinkled old eyes flashing. The exclamation raised mucus

in her mouth. She cleared her throat noisily and then seemed to relax. "Anyway, I got my ration right here."

They watched in silence as she reached her left hand into her bodice and withdrew the brown paper envelope. She continued to hold the gun upon them steadily. Raising the envelope to her mouth she bit at its flap with broken teeth, her eyes steady upon them. She tugged at the envelope, getting it wet. Then, tilting her head back, she shook the open paper container to roll a tablet into her gaping mouth.

"You dropped one!" said Lilian Four.

"Did I?" the landlady said, fearfully, nodding her head forward to search.

George Three leaped and deflected the woman's gun hand. The pistol buckled with a loud noise. The projectile hit the far wall, showering powdered plaster. George Three grappled with her gun hand. Still she clung to it. Once she very nearly overcame him. The gun went off but the projectile passed over his head. It shattered the

viewer plate, producing a dull explosion inside the instrument.

Finally they subdued the old woman and pinned her arms behind her. She sobbed helplessly as they tore the bed sheet into thongs and bound and gagged her.

"Let's go," said George Three when they had finished.

"Wait," said the girl, quietly. "Do you want this?"

It was the landlady's envelope of Tab. It was still wet with the old woman's saliva.

"No," said George Three. "No more."

"Where can we go?" he asked when they were in the alley.

"The harbour."

"But . . . but you said your father and mother . . ."

"There are others," said the nimble footed girl, leading the way.

George Three stopped to jam the small loaf of cheese and the synbread he had been carrying into his pockets. He caught sight of the dead rat nearby. He felt almost thankful.

They made their way be-

tween, around, and over the heaps of refuse. They used lice-ridden and sodden mattresses for runways, animal carcasses for footholds, the rusted product of another industrial age for handholds. They ran and tripped and fell through the cast-off stuff of a hard-bitten people. They sought escape through that which even the wretched society of that district found wretched.

Finally they came to an old street and stopped in the late afternoon shadows to observe it. At first it appeared deserted, but as they watched George Three began to see the street's inhabitants. Projecting from the dingy shadows of doorways and the spaces between buildings were parts of human bodies. Here there was a foot. There a hand. Once in a while the hulk of a bent back, clothed in shredded rags.

"I know this place," said George Three. "It was on the viewer once. It's *Bugtown!*"

"Yes."

"But it's supposed to be illegal . . ."

"It is," replied the girl. "But you can get through if you know the way. *They* have to be able to get in."

George Three watched a leg twitch in the low sun. Above a battered shoe a filthy bare leg extended into the darkness of a doorway. It continued to twitch for some minutes. Then a skeleton-like hand of grey flesh slowly grew from the shadow alongside the leg. The hand clenched clawlike and very slowly began to scratch the leg.

"We'll have to stay here tonight, George. The searching parties will still be in the harbour district."

"*Searching parties*—after one person—you?"

The girl smiled very slightly with a touch of bitterness. "No, not just me, George—though they have sent parties after a single person. There are others. The raid in which my parents were killed . . . was only a part of the campaign against the Abstainers."

And now, thought George Three, I am one of them. It amazed him that the realisation

carried not shame, but almost exhilaration.

"But is it safe—here?" he asked.

"*They* don't bother with Bugtown," sneered the girl. "These men are too nearly dead to interest them."

"But . . . these men . . . You, a girl . . .?"

"I have you, George."

HOW THE TINDER-LIKE abandoned building could remain this long without burning to an ash George Three could not guess. They climbed the ancient frame of a staircase in short, deft leaps that carried them over holes that must drop down to the basement. They reached the dark, second floor and glanced cautiously up and down a long, dismal hall. Many rooms opened off the hall.

"Try this one," Lilian Four said in a whisper.

George Three poked his head into the darkness beyond the half-opened door. There was no sound, none of the snores or heavy breathing that issued from the others. At first he could not see across the room. But finally his

eyes became accustomed to a single faint beam from a crack in the room's boarded-up window. He scanned the floor and saw a dark shape.

"No," he said, backing out of the doorway. "There's somebody in there."

"Is he dead?"

"I . . . I don't know," he said, somewhat horrified.

"Let's see," the girl said, entering the room silently. He followed. She approached the shadowy corner and bent down.

"Help me move it outside."

"What?" shuddered George Three.

"He's dead—freshly dead, I think. Otherwise a cadaver team from the medical school would have got him. *He* doesn't need this room any more, so it's ours!"

He helped her move the emaciated old carcase outside the door. It might have weighed seventy-five pounds.

"Leave it here. That will tell anyone else that we've just moved in and are probably alive."

"Good Lord!" exclaimed George Three.

She smiled and wrapped her arm affectionately around his. "You have a lot to learn of the world we live in, George. But bad as it is," she added seriously, "this isn't the worst of it. What you just left behind is! Now you take off his clothes."

George Three stared at her, motionless.

"Unless you want me to," she added, smiling gently.

George Three forced himself to pull the dismal rags from the dead man.

"We'll need the clothes for disguises," the girl explained, before entering the room. "Besides, a fully dressed corpse in this place would attract attention. They would think we were rich!"

The dead man had been old, very old. He reeked of alcohol. George Three had constantly smelled the odour since they had entered the old house. Alcohol, that ancient depressive! he thought bitterly. That refuge for the jaded and the dispossessed.

Not even Tab, he reflected morosely, could fortify a man against the long, slow pull of age and lost self-esteem.

When he finished the grim task he returned to the room. Lilian Four was cleaning the floor with a rag she had found somewhere. She had somehow managed to rub away some of the foul dirt from a small area. George Three flopped down on the cleaned area. He had long since ceased marvelling at the resourceful girl.

For a time he was silent as she pushed a growing mound of dirt toward a far corner. She seemed to do it cheerfully, and not feel the burden of fatigue that pulled at his every muscle. She did not seem to feel the revulsion he felt toward this grimy, reeking room. Her wiry yet pleasingly curved body somehow must ignore the myriad small injuries and weaknesses that tortured his.

But above all, her mind, he thought, was strong. She affirmed the things that so repelled him, the awful room that now gave them shelter, the vermin-ridden clothing that would disguise them, and, before that, the repulsive alleys and passages that led them—*where?*

Where?

Was there someplace in the world he was only now beginning to know in all its horror where he and this girl could find rest, permanence, *love?* Love.

Love. . . .

Lilian Four had not escaped the hundreds of scratches, bruises, and the million stains of the journey here. And yet she was lovely. Her small, even delicate, features—features that, by some magic, combined in a remarkably strong face—surmounted the small injuries and the soil. Her hair—it was tangled and probably dirty—was alive, soft, radiant even in the faint failing light. The girl's body—the baggy overalls could not conceal its soft, strong loveliness, its vivacity and cool strength.

Strength—life. Those were the key words. A sigh escaped him. He bent his head and thought over the day. A melancholia filled him. He might actually have sobbed, instead he tightened the muscles of his jaw and determined. . . .

What? A voice within him asked the mocking question.

It went on. It called him weak, ineffectual. Boy-man! Man whose salvation apparently came from tagging along behind this girl, perhaps impeding her progress.

And yet, in a way, these feelings were good. They were entirely new. He had never before realised the magnitude of his weakness and emasculation. He now knew its depths.

And there was something else: Tab. At first he denied the fact of it. But now he faced it. For, despite his allergy, Tab had been a part of his life. Once over the first violence of the reaction he had found a kind of peace in Tab. It eased pain, fatigue, fraught memories, and destructive ideas. Did he need Tab now?

Well, he did *want* it. Might as well face the fact, affirm it. He would affirm it as Lilian Four seemed to affirm the negative things of their journey. Affirm, feel the pain, do not shun or hate it, but salvage and use it.

"Rest, George," the girl said, breaking softly into his thoughts. "What you are going through is very usual

and necessary. I have seen a hundred." . . .

George Three's mind attached itself to that. Yes, he thought, it had to be thus. He could hardly expect that she could have been attracted to him alone or to him for what he was.

He forced himself to ask the question. "Lilian—why did you come to my room this morning? Why did you risk warning me?"

"Because I needed you."

"But why *me*? There must be hundreds of others . . . better . . ."

There was just enough light coming into the room in the gathering evening for him to see her face. It was flushed, beautiful . . .

"There are others, George," she said, very quietly. "But none of them is quite like you. And none of them is, for me, George Three."

"But why *anyone*?" he pursued. "Alone you could have . . ."

". . . done nothing," she interrupted. "There are two reasons why I came for you, George. One is . . . personal. One is not."

Many questions rose in George Three's mind, imperative questions. But they were interrupted.

There was a startled look in the girl's eyes. George Three followed her gaze to the doorway. There, silhouetted in the doorway, was a huge, dark hulk of a man. He nearly filled the doorway.

A low growl escaped the silhouette. He took a step into the room.

"Get out of here!" shouted the girl.

The man stopped. "Eh? What's . . . A *female*! Hey!"

He started toward Lilian Four, guided, apparently, only by sound.

"Stop!" said George Three. It was a ridiculous command. His voice was high-pitched.

The figure paid no attention to him.

His heart pounding, George Three jumped to his feet. "*Stop!*" The voice was lower now and firmer.

The figure hesitated and turned. He weaved slightly and let out another growl. He waved his arm at the darkness as if to clear his vision. "Who say stop?"

"I did."

"Who say stop?"

"Here!"

"Man. Fight, huh?" said the other.

"Get out of here!"

"Fight, huh? Fight for her!"

"Get . . . get out of here!" George Three put as much strength as he could muster into the voice.

The blow was poorly aimed. Nevertheless it tore at George Three's ear, shook his senses, and sent him reeling against the boarded up window.

"See ya now!" said the figure, advancing.

The second blow nearly shattered George Three's defensive left arm. He fanned the air with his own right hand. The blow brushed the giant's beard. He was able to dodge the next mighty fist and duck under the rag-clad arm.

He swung again and lifted his body under the giant's arm. A pillow of sagging flesh surrounded his fist. He knew the joy of being a man!

The giant gasped a foul breath and swung wildly at the bobbing target. To dodge

one blow George Three allowed himself to fall back against the wall. Then, bracing his back against it, he lifted his foot and kicked the approaching man. A savage yell followed, thrilling him to the soul. He moved forward savouring the other's heavy breathing.

But he ran headlong into the giant's blow. A tooth gave way. He tasted salt. He was falling. He scarcely felt the kick . . .

He became conscious slowly. Lilian Four was wiping his face. He was in pain.

"What . . . where is he?"

"Dead," she said, calmly. "Outside the door. I have his clothes."

"How . . .?"

"There are ways of killing a man," she replied. "Ways that involve only the edge of your hand. But I could not have done it alone."

"You're not very pretty now, though, *my man!*"

My man!

Despite his fatigue, George Three slept fitfully. He was hungry. The small loaf of

cheese and synbread had not abated his hunger. His stomach protested the loss of the one really adequate meal of his accustomed day, the one he would have received in the factory cafeteria yesterday.

He was in pain. His jaw ached dully. One of his front teeth was broken off. Periodically his nose bled; he could scarcely breathe through it. His body crawled with vermin. He was dirty.

He was mentally disturbed. His tired eyes constantly cast glances at a make-shift device on the door Lilian Four had designed to warn them of intruders. It was contrived of strands of pieced-together string, a pile of old tin cans, and an arrangement of boards. He could not see how anyone could enter without upsetting the device, but the possibility worried him nonetheless.

Lilian Four had said that Bugtown was intentionally preserved for its inhabitants, a vast quarantine that hopeless men secretly found—were allowed, perhaps even forced, to enter but never to leave. Alive, anyway.

Where was he going? Lilian

Four seemed to know a place of refuge. Yet where was there a place of refuge for such as they in a society such as this? The girl's parents had been shot down like animals in a place they had apparently supposed secure. Was there a place for Addicts just as there was a Bugtown for tramps? A place where they lived out some kind of deviant trance-life until a medical school claimed their miserable, addicted bodies?

Yet his doubts were entirely intellectual. He did not *feel* them. His eyes strained to see the shadow that represented the girl in the almost totally dark room. She was sleeping soundly. He longed to stroke the long, very blonde hair she now so completely hid in the dead tramp's hat. And he knew that he would follow her always . . . follow her, that is, until he somehow cast off the spell of his life and became man enough to *lead* with her at his side.

And he knew also that this new life was good, even here in Bugtown. He was prepared for whatever came, a lifetime

of evasion, precarious and temporary shelter, and even the time—perhaps inevitable—when the midnight knock came to their hidden door. . . .

For, looking back, he knew the alternative half-life that he had left behind. The neither-nor land of grey, sad days and lonely, empty nights. The twilight land of Tab-security and death finally without ever life.

Never before, George Three reflected, had he experienced such depths of emotion as he had today:

The urge to kill himself.

The face-to-face defiance of his landlady.

His fight with the giant tramp.

My man.

The dare unto death.

Suddenly it did not matter where he was or where going. He found himself apathetic about the danger, the threat of tomorrow. He *knew* that it was good to be alive and that he *was* alive. He would never accept a compromise with life again, for even to be miserable was, nevertheless, to be alive!

They wakened as the first faint glow of the sun, rebounding off a myriad dingy surfaces, somehow found its way through the boarded-up window.

"Good morning, Lilian Four."

"Good morning, George Three," said the girl. "How are you?"

They laughed at the imitation of their assembly line greeting. Suddenly they were silent. Then she was in his arms.

"Lilian . . ." he said, very softly, after the kiss.

"Yes?" Her hair had found its way from under the battered felt hat. It glowed in the faint grey light with incredible brightness.

"I just wanted you to know . . . that even if we don't get where we're going . . . it will be all right . . ."

They kissed again briefly and parted. They pulled the rags of the two dead tramps over their factory overalls and tied up the slack with string. They managed superficially effective disguises. George Three's battered face, which hurt him badly now,

helped complete his role. The girl might be taken for a ragamuffin boy if not examined too closely.

There was no food. The remainder of the cheese had disappeared, apparently carried off by the rats that George Three had heard through much of the night.

They left the building by way of a precarious fire escape of an ancient type that continually threatened to give way under their weight. They dropped to a narrow passage between buildings, the girl indicating the way. Once they were forced to step over a reeking corpse that apparently had blundered out of a window many days before.

They came upon a faucet protruding from the rear of an old building. Lilian Four stopped and turned the wheel.

"Is it all right?" George Three asked.

"Yes, it's the same water the rest of the City drinks. They keep it on for the Sanitation squads.

"Sanitation squads?"

"Yes, otherwise Bugtown would be too much of a menace."

George Three looked back toward where they had seen the corpse.

"Oversight," explained the girl. "Besides, he died of a fall, not a disease. There is little actual disease even here. Everybody is immune these days.

"What you don't realise yet, George, is that Bugtown has a definite purpose. Ten thousand men—and women, too—live here. The City couldn't provide for its human waste products in any other way. This is a *sanitarium*!"

"Who are they—these people," he asked, almost knowing the answer.

"George Three, Lilian Four, Horace Eight, Ella Two—after fifteen or twenty years of Tab. You landlady in a year or so."

"My landlady? But she owns property."

"She *acts* as though she owns it. For that she is 'paid' exactly as much and no more than if she actually owned it."

"I don't understand," George Three said. "I paid her rent myself. Once I saw

her spend the money I gave her—the same bills."

"Yes," replied the girl, "but her 'ownership' is a carefully built-up illusion just the same. She performs the needed function of providing rooms for workers. So the City lets her 'own' the house.

"Meanwhile she can't sell the property, mortgage it, or even give it away. She has no choice over those who are assigned to her. She is fully responsible for its upkeep—she must repair or replace anything that is accidentally damaged, usually by getting the money from her tenants.

"No, George, her ownership is a matter of words only—just as any ownership is these days."

"Then who does really own things?"

"The State. The powerful Federated State, acting through the City."

"You mean we actually have *socialism* without knowing it?"

"It is nothing resembling the socialism of the ancient idealists and humanitarians," answered Lilian Four, bitterly. "We do have the

Power-State, though, just as all the ancient totalitarians dreamed of it. The only new element is Tab. Tab instead of mere power alone."

"Where do you learn these things, Lilian?" George Three asked humbly. "I can scarcely understand even your answers to my questions."

For a moment she was silent. "I went to a school once. There was a teacher there . . . There was also my father. . . ."

They moved on. They passed through miles upon miles of passages interspersed with brief darts through city streets and wide, almost comfortable alleys. Lilian Four indicated the way in short, confident commands, but they took turns leading the way over and around obstacles. They moved steadily but their pace grew slow. By mid-morning hunger became a nagging companion that they could not ignore. Occasionally they were able to find water to replace the perspiration that now soaked through their double garments and made them miserable in the late-morning heat.

"We're safely beyond Bugtown," said the girl, finally. She wearily dropped down behind a pile of debris. "It isn't so much farther now."

He sat beside her. The summer sun was high now. He lifted his cut and bruised face to the sun, hoping its rays would stop the festering that had started in the deeper cuts. He felt a little feverish.

The girl was also obviously tired now. Perhaps, he thought, she had always been as tired, as uncomfortable, as much in pain as he. She had sustained a cut over her eye in a fall earlier in the morning. George Three noticed that it had reopened.

The stooped, cloaked figure of an old woman appeared from somewhere amid the rubble piles. She shuffled along the path near them mumbling to herself. George Three could not see her face, but he felt an instant of deep sorrow for the figure.

"Good day, madam," he called to her. He did not catch the flash of fear that passed over Lilian Four's face.

The old woman produced a

frightened, hoarse sound and hurried along, disappearing somewhere along their path.

"I should have warned you, George," the girl said when she had gone. "We're strangers here. In a half hour the whole district will know there are 'strangers in the alley'."

"What?"

She explained. "The people who live here are a step beyond Bugtowners. Most of them live by their wits on *vices*."

"Vices?"

"Yes. Other people's vices. Alcohol, narcotics, illegal luxuries, prostitution, even hired murder. Some fugitives buy shelter in this district. Then there is the other side of that coin—*information*."

"That old woman will sell the information that strangers are around again and again. First she'll sell it to the fugitives, since we might be spies for the City. Then she'll sell it to those who might think we had something of value. Finally she'll sell information about us to the police."

"But how would she know

that we are anything but tramps?"

The girl smiled. "Your voice, your greeting, the fact that you sit up straight—these people survive on such observations."

They arose and started on again. The girl led the way, setting a fast pace. George Three was dimly aware that they were doubling back upon themselves.

"Yes," she admitted when he asked her about it. "I think we may have an evasion problem—but don't feel bad about it, George. We would have had to throw off possible pursuers anyway."

"Maybe we could have convinced that woman that we are friendly and broke . . ." he suggested. "Maybe we could have bribed her."

"She would have collected just one more time if you had paid her," the girl replied.

"These people must be pretty low."

"Not low, George. Matter of fact they're rather courageous. They stay out of Bugtown—and that takes courage when you're old and past the factory work age."

"They ask nothing from the State nor of anybody else. They work at their 'trades'—there are plenty of others in the world who work at worse trades—those who helped perfect Tab, for instance."

"*Stand ready to prove your identity,*" said a voice suddenly.

A tall, burly, uniformed man appeared, bearing a pistol. He motioned them to stand up.

"Toss 'em down on the ground and step back—slowly."

They hesitated, then began fumbling for their cards.

"Say . . . the old witch was right. You two ain't tramps. You, there," he said, motioning toward Lilian Four. "You're just a kid . . . or . . . by Christ! Take off your hat!"

Reluctantly the girl did so, her hair falling on her shoulders. The effect upon the guard was startling. He wore an open-mouthed expression for a moment, then his face turned into something incredibly ugly.

"Say . . . I'm going to have

some *fun* taking you in," he said.

George Three stiffened. Instantly the gun was upon him.

"That suits me fine, bum," said the man. "I'm goin' to say you gave me trouble anyway."

"Don't," said Lilian Four suddenly. Then, softening her voice strangely, she began to walk very slowly toward the officer. "You don't have to do that. He's wanted. You can take him in and get a reward . . . and you don't have to worry about him . . . with *me!*"

"Lilian!" started George Three.

"Shut up, you punk," the girl spat at him. Then, turning to the guard once more, she said: "I've been keeping him for somebody like *you.*"

"Lilian!"

The guard recovered himself. "Naw, kid," he said. "I can get just as much for him dead, whatever he's wanted for. I'm going to finish him off. Then he won't . . . interrupt anything."

George Three shut his eyes just before the gun erupted.

"Why you little . . !"

He opened his eyes as the gun went off a second time. The girl was tugging at the heavy man's arm. George Three leaped at them. All went down amid the trash. George Three grabbed the guard by the gun arm and shook with desperate strength.

The gun went off again. It had been close to the guard's face. The flame and smoke temporarily blinded the man. George Three released the arm and quickly grabbed up a stone. He beat the man until his hand was sticky.

He stopped when he realised that the girl was tugging at his arm. He gathered up the fallen policeman's gun and they ran from the scene.

As they cut into another alley they heard a whistle. Then another.

"In here, quickly!" said the girl, indicating a ground storey window.

George Three shattered the small basement window with his foot and cleared away the fragments with the barrel of the gun. He went in first and turned quickly to help the girl.

The room was large and

dark. It was filled with what appeared to be rusted and abandoned machinery of some sort. Quickly scanning the dim interior, they darted to partial cover behind a machine and, hearing a running sound through the window, dropped to the floor and lay flat.

A head appeared in the window, then another. As they watched, the first figure lowered himself down into the room and for a time blended invisibly with the shadows. George Three felt his heart beating rapidly. The weapon fitted wonderfully in his hand . . .

There were light footsteps interspersed with a faint squeak of leather. The man was systematically searching the shadows of the long, narrow room.

As George Three's eyes became accustomed to the darkness he made out the outline of the uniformed figure. He was close now, a scant twelve feet away. He was peering into a shadowy corner to their right. So he knew they were there somewhere in the room . . .

Slowly and silently George Three rose to his hands and knees, ignoring the warning gleam in the girl's eyes. He rose to a stooped position and, being careful to keep the machine between him and the window, he crept toward the figure.

"See anything?" hissed the voice of the man who had remained at the window.

George Three flattened himself against a wooden crate as his quarry turned and motioned the other to silence.

It was incredibly easy. George Three's gun handle thudded into the man's neck. He quickly looped an arm around the sagging body and lowered it to the floor. There he snatched up the man's gun and took cover once more.

After a few minutes the expected happened. The other officer lowered himself through the window into the room and cautiously moved toward where the other had been.

This time George Three's blow missed the nape of the man's neck. He struck again before the man fell. George Three caught him again as he tried to rise.

Lilian Four emerged from the shadows. "Good job!" she said. "Now up!"

They found their way up a totally dark staircase to a second floor. Once it might have contained offices. Now it was an empty honeycomb of dark, dusty chambers. They paused to catch their breaths before continuing.

"Are *all* of these buildings empty?"

"In this district yes," the girl answered. "Most of these old factories became obsolete when atomic power was developed."

"Why weren't they torn down?"

"You can't tear down a whole civilization at one time," she answered laconically. Then she added, bitterly: "There was much that should have been torn down besides these old factory buildings and much that *was* torn down should not have been.

"Atomic power came too quickly, George. Something fine and beautiful but very delicate was lost. Civilization—such as it was—moved on too fast even to tear down what became obsolete. *Moving*

became more important than getting anywhere."

They continued on. They climbed staircase after staircase. There had been elevators once, but little more than empty shafts remained now. Finally they entered a stifling hot attic. Hot, yellow rays filtered into the room through a dirty skylight.

George Three found the handle of an old broom and shattered the glass panes with it. He moved a rotten wooden box into place and hoisted the girl up and through the skylight. With difficulty he followed and they were on the roof of the building.

He was awe-struck by the view. "It goes on and on," he said.

"Yes. Much farther than this."

There were incredible miles of tall and short buildings. Some of them towered to heights George Three had never known before. Some might once have been beautiful. But now they seemed somehow lifeless. Here and there one had fallen, perhaps from fire. He could not imagine a time when the buildings

might all have been occupied, perhaps busy.

"Nearly two million people once lived here, George," said the girl.

"Two million!"

"Yes," she said. "There are clear records of that many. That was before the advent of atomic power."

"What *happened* to them? There are—what, two hundred thousand now?"

"Yes. It's a long story. There are a few books that I have seen about it. Much of the Great Decline—as it is called—is traceable to the coming of atomic power. As large and small factories saw what it could do they created a great demand. The government, which even then controlled all of atomic energy, was too weak to resist the demand. Safeguards were impossible to set up; there were not enough inspectors. Literally millions died of slow radiation poisoning—but you will read of all this some day, George."

Some day, he thought. When?

He followed as the girl let herself down to the eaves of the

old building. Without ever looking down, the nimble girl leaped the intervening four feet to the other building. A feeling of dread nearly overcame him, but he followed, falling to his hands and knees at the end of his leap.

"That's right, don't look down. It's easy if you aren't afraid."

"Lilian..." he said, between gasps for breath. "Where are we going?"

"It has been a long way without knowing, hasn't it?" she said. "Well, it's that building there."

She pointed as she prepared for a longer leap to still another building. George Three searched the sector she had indicated.

"The one with the cupola. The *church*." Taking a short run down the sloping roof she jumped and landed lightly on the other roof.

George Three hesitated. It was a full five feet. The other building was about a foot higher than this one. But the girl beckoned him with a smile. He leaped and managed to gain a footing.

Church. Churches meant re-

ligion. That was what you saw if you stayed up very late at night and watched the viewer programmes. He had done so one night when he couldn't go to sleep. But *a church*, meaning a *building*?

"People once left their homes to go to churches," said the girl.

"How...?"

But he did not finish the sentence. The first explosive shell sent tiny stone fragments showering into his leg. The shock of the next one stunned him. He strove to rise from the roof, to see through a veil of red. There was an intense ringing in his ears. He heard nothing else for a long time. He felt himself floating, perhaps being carried . . . endlessly.

"'George . . . Three'."

"What else it say?"

"'Trans . . . transformer assembler.' Hey, he works in a factory."

"That's a fake. Ain't no factory workers in this sector."

"Well, it says he lives in Sector B."

"Sector B is way the hell and gone from here. They get the other one yet?"

"Naw. Scooted down a fire escape tube. We got the whole area cut off."

George Three was conscious of the light on the other side of his eyelids long before any other sense operated. It was red, incredibly bright and hot. It wavered and went out on him many times, but he found that with concentration he could control its intensity somewhat. If he thought very hard it would brighten and become almost white. But when he relaxed it quickly deepened in hue and disappeared into a swirling mass of very dark red and black. Each time it disappeared it became harder to bring it back. He tried hard to keep it bright.

"I tole you not to call me on these Bugs."

"But chief, this one ain't..."

"That," said the gruff voice, "is a bug. Looka them rags. Looka that face."

"... but he had a gun."

"What?"

"Yeah, chief," said another voice, joining in. "Service gun—like yours."

"And look under his coat. Overalls!"

"Let's see. Well, get some water and bring him to," ordered the chief.

The world erupted in bright flame. Pain returned. George Three vomited.

"Clean him up good. I don't like them—that way."

When his nausea and coughing had subsided momentarily, George Three attempted to rise to his elbows. Instantly he was kicked down to the hard surface.

"Wait a minute, wait a minute. You got plenty of time for that. I want to talk to him."

George Three tried to open his eyes. All was blurred.

"What you doin' on top that building?" a fat, purple-faced man demanded, bending over him.

George Three opened his mouth to speak. Dried blood pulled at the skin. The sound that came out startled him.

"Say, chief," said one of the figures. "The Feds knocked over a place somewheres down here. Addicts..."

"Yeah," said the other. "Maybe this guy..."

"I'll do the maybe stuff around here," snapped the

chief. Then, turning back to George Three, he said: "Snap out of it, Addict. What you doin' up there?"

George Three was silent. He had barely understood what they were asking. His head was slowly clearing. Behind the three men he saw buildings along a narrow street. There were a few shuffling hulks of men and women on the sidewalk. Two or three of them were looking down at him, their haunted faces twisted into a weird kind of . . . *pity*.

"Nudge him a little," said the chief.

A stab of pain struck him in the chest. Buckets of water again brought him from dark depths.

"Hey!" growled the chief, straightening up. "Get back there you!" He was waving his arms at the growing crowd of ragged people who had stopped on the sidewalk. "Get back or I'll run you in."

George Three caught a glimpse of an arm being extended.

"Hey!" The angry chief was nearly pushed off his feet.

Suddenly a tight circle of humanity formed around

George Three and the policemen. It tightened. One policeman drew a gun. He fired quickly and two gaunt figures went down with short screams. He was about to fire again when a thin hand descended like a knife on his wrist.

The milling crowd closed in with angry grumbles. The heavy bulk of the police chief fell convulsing on top of George Three . . .

The circle of many-coloured lights grew out of the intense black. It grew periodically to great brightness and then dimmed almost to invisibility. George Three concentrated upon it, strove to hold and have the beautiful object, be it real or phantom.

Under his concentration it grew. The circle gradually resolved itself, its outlines still somewhat fuzzy. But then, to George Three's horror, the circle seemed to break. Long black cracks coursed through its coloured surface.

He tried to prevent them. But he could not.

Now the cracks seemed to mark off boundaries within the circle, each enclosed area

assigned a certain brilliant colour. The whole now took on a kind of pattern and perhaps a meaning. George Three saw that the process was good. The circle was a lovely thing, and while it as yet carried no objective meaning for him, it nevertheless warmed and somehow comforted him.

Now the circle seemed to recede. Again he resisted and again failed to prevent or stop a process that was outside of himself. Thus he came to know that the circle of coloured light was real—and that he lived. Long shafts of delicately tinted light now struck from the coloured areas of the circle. They struck down obliquely and fell actually upon George Three himself. He found that by moving his head a few inches either way he could fill his entire eye with a single glowing colour.

Now the shafts of light were interrupted. But this time he did not resist. A silhouette resolved itself against the spray of light. It grew a shining, tinted halo . . .

"George," said the voice of Lilian Four.

"Lilian!" George Three

said, trying to sit up. But numb limbs would not support him.

"Don't try to get up," said the voice of a man from the shadows. "The casts aren't dry yet. You might break them."

"Casts . . . ?"

"You needed some patching up, George," explained the girl. "Your ribs and one arm. We have to put you in shape."

The girl's last words puzzled him. As he recovered full consciousness a flood of questions came into his mind.

"Lilian . . ." he said, finally. "We're in the church, aren't we?"

"Yes. But how did you know?"

"That," he said, pointing toward the source of the now waning light.

"Stained glass window," she said, knowingly. "One of the very few in this world."

"There is much to tell you Mr. Three, and not much time to tell it. The church here is only a temporary hideout. The police are superstitious about it. But the federal agents are not. After last night they will

scour this area completely."

Propped up on the crude cot, George Three stared in bewilderment at the intense faces of the group. They seemed vaguely familiar, but he could not identify any of them. Lilian Four was seated beside him on the edge of his cot.

"Who are you?" asked George Three.

The other smiled. "Perhaps that is as good a starting point as any. Our names are unimportant. We are the people you've met many times before without recognising. You worked in the factory with some of us—Lilian Four here. You lived on the same block with one or perhaps two. Others you saw 'exposed' on your viewer—here is Dr. Samuel Eight, one of the foremost rocket engineers alive. Some, like Beth Two here, 'taught' in the City schools—taught, that is, in the State-accepted fashion.

"We are the *Addicts*—addicts in the strangely inverted sense that this society know defines the word. We abstain."

Abstain. It was still not pos-

sible for George Three to shake the horror of the word.

"We are the arch criminals of the modern Power-State, George. We cannot escape admitting that fact. Other men and women rob and kill, sell contraband and narcotics. They are cast into prisons or 'rehabilitated'.

"But the real criminals of this age are the men and women right here in this room and their counterparts in the world at large. *We* threaten the very State. More than that, we further a movement that would inevitably cause others to threaten it.

"And yet, we form no plots. We attack no basic premise of the existing state. We plan no revolution, certainly no subversion. We propose no violence, sabotage, or threat of these. We do not plan assassinations, or capture of the State. We urge no ideology that is foreign to the moral spirit of man.

"We simply will not take Tab. Simple, isn't it?" said the man.

George Three gazed in wonder at the small group. They were Addicts, he told

himself again. The thought no longer carried any power.

"And yet," continued the speaker, a man perhaps in his middle forties, greying slightly above a head of sharp, sensitive features. "And yet we constitute the only real threat to this State. We will not take Tab. We will not, therefore, *Harmonise*. We reserve the right to think, to feel, to intuit as *men*! We would think, mind you, George. Would dream. Would try, and perhaps fail and would try again. We would stand as men, perhaps fall. But as *men*!

"We will not live the spell-life Tab imparts. We will not accept the dulling terrible Harmony of *half-life*, *half-death*!

"Human slavery cannot be maintained with words or force. The human spirit is too strong, inexorably strong, imperatively strong. It breaks all bonds, climbs all walls, resists and finally overcomes all forces. It develops from birth, yet it transcends death. It is wise and ever good.

"You can bind and blind a man and curl him with pain. But if you leave him alive—

and sane—he will live and grow, become cunning, and one day escape you.

"Tab is very nearly the answer to the ageless awful quest of power of man over man, George. For Tab attacks the very spirit of man. Tab-harmony is emasculation and half-life. It makes animals of men. Tame, dull animals without even the ferocity of animals. It makes them blind robots.

"We resist Tab, *ergo* we are traitors of the State that it has made possible. The slave-state. We are Addicts. And you, George Three, are one of us!"

"You . . . you mean my allergy . . ."

"Yes," said the speaker, "your allergy."

"But *why*?" asked George Three. "Why me? I'm just one man." He turned to Lilian Four. "*Why*, Lilian?"

"That," said the speaker, smiling, "is the final story. Tell me, George Three, what do you remember of *Village*?"

George Three's face lit up. "That was before they sent me to work in the City. Sometimes I dream about it. There were *books*. I could have all the

books I wanted. I must have read hundreds of them. I remember I loved them . . . *then*."

He searched his memory.

"I remember a certain professor I had. He had a funny name, not like our modern ones—S . . . S . . . Stein! That was it, Stein. There was something peculiar about him. He gave me books. Hundreds of books. They were on *mathematics*—numbers, mostly. Then we would go for long walks in the woods. He would ask me questions from the books and I would try to answer. Questions about mathematics.

"Sometimes he would bring paper and I would work out puzzles and games. Sometimes they would take days to work. But he would help me and finally I would solve them."

His eyes were blank. But he broke the spell cast by the strange new wealth of memories and smiled foolishly.

"There was a girl. I haven't thought of her for a long, long time. She was also Stein's pupil. Sometimes she and I would both go with Professor Stein."

"Please go on," said the other man.

"Well, there was a lot else that I don't remember too well. We had classes in history and social conformity and . . ."

"Yes?"

"Well," continued George Three. "Sometimes Professor Stein would take me into a dark room—I had almost forgotten that—and talk to me in a low voice. I remember his watch—it would shine in my eyes. I think I would go to sleep. I don't remember it too well, but he didn't talk about numbers, but what it was I'm not sure. I think I would always go to sleep. And when I would wake up he would say, 'Some-day you will be a great mathematician'."

"And then?" urged the other man.

"Then one day they took Professor Stein away. I remember it now. He didn't want to go. But they grabbed his arm and led him to a car. I remember I called to him, said goodbye. That's about all I remember, except that soon after that they sent me to the City."

"Very good," said the other

man. His face was lit up. He turned to the others. "You see? Stein was a genius—a martyr. There are eleven more like George Three."

He turned to George Three once more. "Professor Stein was killed as a traitor, soon after he was 'taken away,' as you put it. And traitor he was—in this society! You and a few others are his greatest act of treachery."

"What?"

"Yes, you are a *plant*, George Three. You were given the preliminary training for a future job that is only now unfolding. Professor Stein secretly taught you mathematics. Furthermore, those sessions in the dark room you spoke about are responsible for your so-called allergy!"

George Three was too shocked to protest.

"Professor Stein, more clearly than anyone else at the time, saw the full social ramifications of the drug Tab, which was just then being issued to workers widely. He saw that this 'aid to production' was to become a tool of power—well nigh absolute power—and that

as such it was to become well nigh absolutely bad.

"He visualised the kind of state it would make possible—hence probable. Thus he set about scattering seeds, as it were, for the future. Somehow he managed to get a job as a teacher in that obscure Village you came from. He taught the State Curricula—that even then vicious system of Statist lies. But he kept on the lookout for brilliant children. When he found a promising young mind he carefully prepared and conditioned it.

"Yours, George Three, was such a mind. He discovered and nurtured your natural bent for mathematics. He gave you the original discipline for that science, taught you the fundamentals, and did all he could to prepare you for the day when it might be used.

"Meanwhile, he knew that you would be sent on to the City for factory service. The society even then was developing an insatiable thirst for the material products of the new atomic technology. He knew that you would be put on Tab. Thus, over a period of years, he suggested to your hypno-

tised mind a natural defence against ever completely accepting the drug. Thus your allergy!"

The sun was down now. The stained glass window no longer glowed in its rays. The large room was dark. George Three noticed the sky showing through a hole in the high ceiling.

"But I'm no use to you now," said George Three sadly. "I don't remember *anything*."

"Not consciously. But it is there. Deep down inside you lies the pattern of a mathematician, George. The good years with Professor Stein are still there. It will take time and study. We have the books you need—they are banned now, but we have them. There are a few teachers among us. . . ."

"Then what? What will you do?"

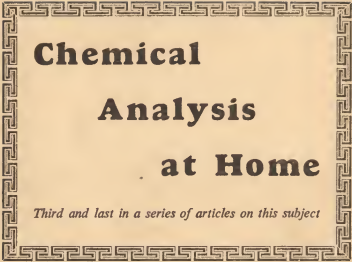
The other man looked up toward the hole in the roof of the church.

"Look," he said. "Stars. That is where we are heading. We will build a new world here on earth. We have the site. One day the world of Tab will fall under its own corruption and decadence. Meanwhile we will be preparing for the New World."

George Three felt the promise of the man's words.

"One more question," he said. "The girl—there was an evening when we both left our dormitories and lay under the stars . . . I remember she was also one of Professor Stein's pupils . . ."

"Yes, George Three, I was!" said Lilian Four.



Chemical Analysis at Home

Third and last in a series of articles on this subject

We have covered the so-called preliminary tests and we have dealt with the identification of the metals in a substance to be analysed. Now we have to look at the non-metals. These are such elements as carbon, sulphur, chlorine, hydrogen, oxygen.

Very rarely are non-metals found in a substance uncombined. Nearly always they are linked up with other non-metals to form the so-called "acid radicles." Rust, for example, is a compound of iron and oxygen, and here the non-metal occurs alone. So does the non-metal chlorine when it is tagged onto an atom of sodium in common salt. But in the case of, say, gypsum, the molecule is rather more complicated. Here the metal is calcium, and attached to it is a group of five atoms. Of these five, one is sulphur and the other four are oxygen.

Now these five atoms linked together in this way form a chemical entity—*i.e.*, they undergo reactions as a whole, showing properties quite different from those of sulphur and oxygen in the free state. This particular group is called the “sulphate” radicle, and the compound it makes with calcium is calcium sulphate. When it is attached to two atoms of hydrogen it forms sulphuric acid. *This* is the kind of thing we shall be testing for, the *groups* of non-metals, not the individual non-metals which constitute the radicle.

To analyse for these radicles, first boil your substance with washing soda (sodium carbonate). Filter if necessary and reject any precipitate. Divide the filtrate into four parts.

To one portion add a little dilute hydrochloric acid and wait for the bubbling to stop. Then add a few drops of barium chloride solution. A white precipitate shows the presence of a *sulphate* radicle.

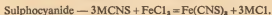
The equation for the reaction is:

$M_2SO_4 + BaCl_2 = 2MCl + BaSO_4$ (here and elsewhere the M represents the metal present in the substance).

Acidify another portion of the original filtrate with dilute nitric acid, and then add a drop or two of silver nitrate solution. You may get one of the following precipitates:—White, soluble in ammonium hydroxide—indicating the possible presence of either a chloride, a cyanide or a thiocyanate; White, *insoluble* in ammonium hydroxide, indicating presence of a ferrocyanide; Pale Yellow—indicating a bromide; Deep Yellow, insoluble in ammonium hydroxide—indicating presence of an iodide; Orange—indicating presence of a ferricyanide; Black—indicating presence of a sulphide.

Now take another portion of the original filtrate and acidify it with acetic acid. Add a drop or two of ferric chloride solution. Here again, you may get one of several precipitates.

Deep-blue means ferrocyanide is present. Blood-red means sulphocyanide is there. White, soluble in dilute hydrochloric acid shows phosphate present. These are the equations:—



To the last portion of the original filtrate, add ferrous sulphate solution. A deep-blue colour shows the presence of a ferricyanide. If no colour appears, add a few drops of ammonium hydroxide. A yellow precipitate shows the presence of an oxalate. If you get no precipitate either, pour strong sulphuric acid carefully down the side of the test tube, trying not to disturb the liquids more than necessary. A nitrate is present if a brown ring forms where the two liquids meet.

To distinguish between chloride, cyanide and thiocyanate precipitated by silver nitrate in the first of these tests, carry out the following experiments. Remove the precipitate from the filter paper and place it in a strong light. It will turn slowly violet if a chloride is present. If it does not turn violet, add a very small amount of hydrochloric acid and smell carefully. The characteristic odour of bitter almonds shows the presence of a cyanide. This is very *poisonous*; do not smell longer than necessary, and pour down the drain as quickly as possible.

To test for thiocyanate dissolve some of the precipitate in ammonium hydroxide and add a drop or two of ferric chloride solution. A blood-red colour shows the presence of this radicle.

The only other radicle which is commonly present is carbonate. You test for this by adding hydrochloric acid to your original substance and passing the evolved gases through lime water. If the lime water turns milky, a carbonate is present.

For all these radicles you test by placing an inch or so of your original filtrate in a test tube and adding the substances necessary to produce precipitates or colour changes. Where the solubility of a precipitate is a guide to its identification, there is no need to filter before adding the dissolving fluid.

For example, if you add silver nitrate and get a white precipitate, you can immediately add ammonium hydroxide to the test tube. Then, if the precipitate dissolves it is either chloride, cyanide or thiocyanate; and if it does not dissolve it is ferrocyanide.

A few general remarks should be added to make your analyses as efficient as possible. Work on a small scale and keep your apparatus clean. Mop up anything you spill as soon as you spill it. Make sure that your chemicals are in airtight bottles—not tins—properly labelled. Wash up used apparatus as soon as you have finished an analysis or you may never get them clean again.

Never rush an analysis; give a precipitate time to form and a colour time to develop. If you are not sure of a result, do the test again. Enter in a notebook not only the tests that are positive but the negative results as well and the procedures used. This way you will soon memorise the procedures.

Finally, if you have any difficulties, problems or queries, write to us about them and we will do our best to straighten things out for you.



Projectiles

Overseas Section

ERROR?

I have been following *Authentic* since it began its career and I am much impressed by your improved format, your articles and the much higher literary quality of your stories. There is, however, an error in one of your recent articles which I should like to correct. In Number 38, on page 100, you state: "Hermes is only one mile in diameter. Many experts believe that the Meteor Crater in Arizona was not caused by a meteor at all, but by an asteroid of the size of Hermes." The only correct thing here is the diameter of Hermes. . .!

Paul W. Healy,
Institute of Meteoritics,
University of New Mexico,
Albuquerque, New Mexico.

Sorry about this, Mr. Healy, but you are wrong. Whether the experts we referred to are right or wrong does not affect the truth of our statement, viz., that such experts do believe it. One such expert is Dr. Robert S. Richardson of Mount Wilson Observatory. In his book Astronomy you will find his views on page 181. However, the evidence you put forward in the rest of your letter does indicate that these experts are wrong. But please don't blame us for their views! Thank you very much for writing. Do it again.

NOT BORED NOW

Having been an ardent science fiction fan for the last four years, and been slightly bored with it of late, I managed to obtain No. 37 of your magazine. After about ten minutes of reading, I found, much to my delight—so rare a thing in sf lately—that I was unable to put it down. I really must congratulate you on a first-class

magazine. In my opinion you are way ahead of your rivals in stories, designs and covers.

22692284 Pte. Whalley, D.,
Royal Army Pay Corps,
Command Pay Office,
Gibraltar.

Number 37! You haven't seen anything yet!

EXCHANGE

Thought you might like to hear from a reader in India. I am glad you are giving more space to British authors; now is the time to develop your home authors while British mags are giving more and more value for money, and the American mags are cutting down. I have a large number of spare American mags and would like to exchange them with your readers for back issues of *Authentic*, Panther Books, etc.

John D. Rundlett, Hotz Hotels Ltd.,
Laurie's Hotel, Agra, India.

Thanks for writing, John. No doubt some of our readers will swap with you.

AMATEUR GOOD

This writer, David Wilcox, is capable of singular expressive alliteration which is, for my own discernment, the aspiration of a moderate classical literature. Please

compare him favourably with Bradbury and Sturgeon, for with this one story he promises to become their equal. How concise! How word-savouring! And such mature imagination! No wasting ability on pedantic science jargon, on religious fantasy. My gratitude and expectation, David Wilcox.

Richard Dumigan,
10895 Cobourg Avenue,
Montreal North, Canada.

It's nice to know you agree with us, Richard, and we are sure that Wilcox will be pleased with your remarks. We are hoping to print some more of his stories soon.

HUMOUR

The only good feature not in your stories is a semi-humorous approach that there is in a couple of other science fiction magazines. I have sent my copies to my brother in New Guinea; I hope he enjoys them, but I fear that he may not appreciate a magazine that requires depth of thought and an elastic mind that can grasp unusual concepts.

S. M. Bohman, 60 Minna Street,
Burwood, N.S.W., Australia.

Humour is hard to find, Mr. Bohman—and hard to write—but we do have one now and then. Stand-in in Number 43, for example.

Let us know how your brother gets along, reading Authentic in the swamps!

BACK NUMBERS

I wish to obtain the following back numbers of *Science Fiction Fortnightly* and *Authentic*. I am willing to pay a premium price over the cover price for copies of these numbers: 1, 2, 3, 5, 6, 9, 10 and 11.

F. H. Way, Sungei Lembing,
Pahang, Malaya.

Readers: We are holding Mr. Way's cash. If you wish to sell any of these back numbers to him, send us the details and price, not the books. If business can be done, we will send you the money and you can send Mr. Way the books.

UNFIT

Although I do not normally write letters to editors, I feel that I must do so now. You see, I have to bid you farewell, as our illustrious government has decided that your literature is morally unfit for us to read. This means that, after reading all your books from Number 10 onwards, I, together with many others, am to be deprived of the pleasure and

enjoyment of your stories. I write this mainly to thank you on behalf of all South Africans for your stories, which, although I have not agreed with all, have, nevertheless, been a source of great enjoyment. Please don't print my name and address.
E.K.B., Johannesburg,
South Africa.

AND ANOTHER

It is with the deepest regrets that I find I must say goodbye to your really fine magazine. This goodbye is forced upon me by the government, which has placed all sf magazines on the banned list. I first read one of your magazines at Nkana in Northern Rhodesia, where it went on sale the week I left for South Africa—American sf was unobtainable up there. Then I started buying them up down here. And now. . . .
Fred van A., Johannesburg,
South Africa.

We feel it too, Fred. It's like losing good friends, because that's how we looked upon our readers in S.A. But let's keep hoping. Maybe we'll be back with you in no time at all.

Home Section

OHI

Please, *please*, would you make a statement in *Authentic* that I am not a patient at Staffordshire General Infirmary but a *student nurse*! The last time this mistake was made I decided that if I wrote you, by the time you could publish my letter it would have been too late to stop the arrival of sf mags from other sf fans. In any case I could make my own explanations to the people involved, which I did. It appears this was a wrong decision and I'm a little afraid of the outcome. Last time the Assistant Matron—who deals with the post—absolutely adored me!

Mrs. J. Childs, 33 Redhill Road,
Chadsmoor, Cannock, Staffs.

We're really very sorry for any inconvenience caused to you by our reading too much into your letter, Mrs. Childs. But you should have told us about it earlier—it would have been nice to know that some readers had responded to our appeal. Still, this notice should clear up the matter.

NO MOON

Why have you so blatantly ignored our Moon in your series of cover paintings? It may be a

dead world—though it's not all that dead—but it will certainly be the first world on which man will set foot. I am enclosing three photographs of my own paintings, showing spaceships, etc. I have done quite a lot of this work, all of which is scientifically accurate. Your cover artist does not seem too sure of his illumination; Mars in issue No. 40 is showing an impossible phase!

David A. Hardy,
44 Griffins Brook Lane,
Bourneville, Birmingham.

There are far too many pictures of the moon about, Mr. Hardy. We like to have something different. If you sent your drawings for an opinion, we can only say that they resemble much too closely the illustrations in Gatland and Kunesch's recently published Space Travel to have any real value. Concerning our cover on Number 40—remember that phases seen from Earth are not the only ones possible. Indeed, there is an infinite number of phases related to the position of the observer.

CORRECTIONS

I would like to correct mistakes that were made in two of your readers' letters in Number 40.

First of all, Archie Mercer, who speaks of there being nothing wonderful in space travel and being idiotic enough to imagine that insects and Pterodactyls were space travellers. . . .

D. Bailey, 50 Mayplace Avenue,
Crayford, Kent.

Come, come, Mr. Bailey. Archie Mercer said no such thing. He said that there is nothing wonderful about flight, not space travel. And you have to admit that insects and pterodactyls have been flying for quite a while!

EN GARDE!

I dare say that you are under the impression that your magazine is only being read by the inhabitants of this planet, Earth. If you are, I can assure you that you are wrong, as you will find out in the near future. Speaking for myself, I am here to help you. I have come for a good cause. I admit I have not yet reached full maturity. . . .

M.J., Portsmouth, Hants.

We've been waiting for you. But one thing worries us. You say "speaking for yourself." What about the others? Are they helping too, or are they marauding varmints?

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DAVE RIKE, our U.S.A. Correspondent, provides news, views, reviews to the extent of several pages in each issue. Like Forrie Ackerman, Dave is a native Californian with a distinctive style of his own.

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YOUNGEST READER

You will find enclosed a photograph of my cousin, aged two, who was sitting quite engrossed in *Authentic* when I happened to walk in the other day. Maybe you've got another fan even though he is a non-reader, as yet. G. Lye, Pear Tree House, Low Pittington, Co. Durham.

And a very pretty picture it makes, Mr. Lye. But what makes you think he is not reading it? We'll never believe he was just staring at the print. A bright boy, that. Watch him!

FEUD

What we need in *Projectiles* is a rip-roarin' feud. The battling fans. C'mon fans, let's have more life, let's have some real crazy feuds, let's have some favourite fans as well as favourite authors. Here's a feuding topic. Who says Bryan Berry has adapted Ray Bradbury's style of writing? Evidently Basil P. Coukes does. Heck man, to say Berry writes like Bradbury is plain silly. If every new up and coming author was accused of copying another author's style, we'd soon have very few original authors indeed. You might as well say Bradbury has copied Berry's style! Don Allen, 3 Arkle Street, Gateshead 8, Co. Durham.

Well, there it is. If you want it, go to it.

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